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The Purbis Lecture

ON

THE TREATMENT OF INOPERABLE CANCER.

Delivered before the West Kent Medico-Chirurgical Society on Dec. 6th, 1912,

BY SIR ALFRED PEARCE GOULD, K.C.V.O., M.S. LOND., F.R.C.S. ENG.,

SENIOR SURGEON TO THE MIDDLESEX HOSPITAL.

MR. PRESIDENT AND GENTLEMEN,—My first word must be one of grateful acknowledgment of the compliment paid to me in asking me to visit you and to deliver this address—a compliment that is enhanced by the distinction of those who have preceded me in this office and by the presence in the chair to-night of my old and valued friend Mr. Willmott Evans. He it was that suggested that I should select as my subject to-night "The Treatment of Inoperable Cancer," and as I have been for 30 years on the surgical staff of the Middlesex Hospital, and for more than half of that time have had charge of patients in the Cancer Charity of the hospital, I felt that I could do no other than adopt Mr. Evans's suggestion.

GENERAL TREATMENT OF CASES OF INOPERABLE CANCER.

My subject naturally divides itself into two parts, the general treatment of cases of inoperable cancer, and the special treatment of cancer other than by operation for its removal. I will deal with it in this order.

Importance of Mental and Physical Rest.

We sometimes hear it said that "the doctors have given up So-and-so and can do nothing for him," and I want at the outset to enter my protest against the view that, because no operation is possible and no specific treatment is being tried, our art is helpless. One of the first things I learned when I had charge of some of these advanced cases of cancer in the Cancer Charity of Middlesex Hospital was that, with scarcely an exception, every one of them improved after coming into the ward—many of them improved quite markedly—and that the duration of life was nearly always much more than I had anticipated. In other words, the hospital treatment is of great value to them. Part of this good is, I think, the result of mental rest; the relief of anxiety when a very poor man or woman is removed from a poverty-stricken home into a well-appointed hospital, with the assurance that the stay there is to be as long as life lasts, is very great.

The mental quietude the patients usually exhibit is quite striking, and I believe it has important physical effects. In its absence we usually find ourselves unable to relieve these patients as we are accustomed to do. I have often heard from the sister of the ward that "No. so and-so has not settled down yet," and this is given as the explanation of physical ills. This "settling down" is an important condition of physical well-being in these poor sufferers; it means more than getting accustomed to new and strange surroundings, to the getting over the separation from "home"—a word that is as sacred and as full of meaning upon the lips of a poor hospital patient as from anyone. It means the absence of anxiety about husband or wife and children, the confidence that one's own wants will be met even to the end, and I have come to think that the knowledge of the incurable nature of their illness is also, as a rule, not without its helpful influence. Here, I know, I am making a statement that will not win general acceptance. I am very often requested by the friends of patients not to let them know that they are suffering from cancer, and such a request one is bound to respect. But all the same, I must say that in my experience the knowledge of the real state of affairs has very rarely seemed to do harm, and in the late stage of the disease, when curative measures are not to be thought of, and palliation is our function, it has seemed to do great good.

Only the other day on visiting my cancer patients I came to one who had been in the ward about a month, and was the subject of a very extensive ulcerated cancerous growth in the chest wall—a recurrence after excision of the mamma. I remarked to her on her improvement since she had come in, and asked her how it was. Her answer was that she had everything done for her, and that she had "*no worry.*" I have often asked one of the sisters of the Cancer Charity her opinion on this point. She is a woman who possesses the qualifications for her particular work more fully—indeed, I may say more perfectly—than I have ever known them combined in any other individual. I have, therefore, great confidence in quoting her opinion. She has no doubt at all that it is wise to let such patients as come under her—cases of late cancer—know the grave nature of their disease, and that recovery is not to be expected. As an example, she reminded me of a poor woman with advanced uterine cancer, who used to greet her every morning with a tale of the wakefulness of the previous night, of the pain she was then suffering, and of her other troubles. This went on day after day in spite of efforts to relieve her, till one day the sister had an opportunity of having a quiet chat with her, and told her that she feared she was not going to get well. At once the picture changed, she became quiet, uncomplaining, and apparently in far greater comfort, and she told the night nurse when she came on duty what the sister had said to her and how glad she was to know it.

This is a quite usual experience, and in view of it I cannot share the common opinion that patients with malignant disease are to have this fact most carefully concealed from them. Indeed, were it so, the Middlesex Hospital Cancer Charity would be a cruel mistake, its very name would condemn it, and to have wards full of patients, each of whom passes out through the portal of death, would be only to add to the calamities of those it seeks to succour. A visit to these wards soon removes such an illusion; they are, of course, pathetic to those in enjoyment of full health, but the comfort they bring to the patients, and even the brightness they often add to the closing months and weeks of life, are beyond all cavil or question. Of course, I need not explain that I am not advocating either premature or callous or careless lifting of the veil. It requires judgment when to do it, it always needs wise tact in the doing.

One often has occasion to observe the bad effects of mental worry in these patients. Time and again when I find a patient not so well, with more pain or weaker, I learn that there has been some home worry that has caused it—a husband or child ill, or not behaving well, or children uncared for, or the little home broken up, or the sudden cessation of accustomed correspondence. The influence of mind on matter is seen with quite special force and clearness in cases of advanced cancer.

Along with mental rest I attach great importance to physical rest. The degree of this must vary with the powers of the patient and the stage and situation of the disease, but the general working rule I have is to urge my patients never to take any physical exercise or do any work that causes any sense of fatigue. So long as walking exercise is only a pleasure, it should be enjoyed. Later on, it is of service to these patients to sit in the open air and bask in the sunshine when that can be secured. So soon as leaving their bed is any effort or fatigue to them, I always press them to stay in bed. So far as I have observed these patients, rest is one of the primary conditions of their well-being.

The Observance of Strict Cleanliness.

Second only to rest in the management of these cases is cleanliness. In cancer of the mouth, great good follows the frequent use of a mouth-wash, or the gentle removal of particles of food, mucus, or discharge with pledgets of cotton wool. Pyorrhœa should be dealt with with all the rigour of the dentist's art. We must never think that because a patient has hopeless disease it is not worth while to attend to these details, even at the cost of much trouble. I have so often seen great benefit result from these measures that I have no hesitation in urging their adoption. The mouth-wash I prefer is sanitas and water in the proportion of 1 to 2 drachms in 5 ounces, but it is the frequency and thoroughness with which the lotion is used that are of more consequence than the composition of the lotion, provided only that it is not irritating. The mouth must, of course, be well cleansed before and after taking food and at more frequent intervals according to circumstances. I may here add that all loose teeth should be extracted, and that the removal of sloughs and sequestra is often followed by considerable relief.

In uterine cancer the frequent careful use of non-irritating

antiseptic douches is, of course, indicated. When hæmorrhage occurs the douche should be as hot as the patient can bear. Here, too, the removal of sloughing masses or the careful curetting of fungating growth is attended with benefit; the curette must be used with care, remembering that in extensive disease it may readily penetrate peritoneum, bladder, ureter, or rectum.

For cancer of the rectum similar measures add much to the patient's comfort; the gentle removal of all particles of fæcal matter or discharge should be attended to. Where colotomy has been done, the washing through of the bowel from artificial to natural anus should be regularly carried out whenever it is possible—I have often been surprised at the amount of local relief and general improvement that have followed this measure. For this purpose I have found nothing better than sanitas and water, an ounce to the pint.

The same care should be taken to keep external cancer as clean as possible. This may be effected by the use of antiseptic lotions, ointments, and dressings; in other cases the use of X rays will be found very beneficial in "cleaning up" extensive and foul cancerous ulcers, and the diathermic cautery will effect the bloodless removal of sloughing or fungating growths, to the very great advantage of the patients.

In addition to such local cleanliness, the general cleanliness of the body and of the patients' habits of course adds to their comfort, and I think also helps them to fight the disease. I have thought that this was one of the smaller ways in which we help the poorest and most neglected among those who come into our Cancer Charity.

The Nature of the Diet.

As to diet, I need say but very little. It should be simple, easily digestible, and varied. I know of no necessity to exclude meat, or fruits, or vegetables. It should not be excessive; in the latest stages these patients are often able to take only very little food, and to give them more only causes vomiting or adds to their pain. In cancer of the mouth or pharynx it is very important that the food should be unirritating and should not require masticating; within these limits, however, it should be as varied as possible, and should include fruit, vegetables, and farinaceous food, as well as milk. I find it very important to warn my poorer patients not to spend their money upon costly beef-tea and meat extracts of little or no nutritive value. There is still a very widespread belief that these preparations are necessary constituents of the diet of all invalids; they may, of course, be taken, but they are not essential, and should never be used instead of the more nutritive milk and eggs. As to other fluids, cocoa is very useful, tea taken neither very hot nor very strong is good, coffee is not so advisable.

Abstinence from Alcohol.—Use of Sedatives and Anodynes.

Alcoholic stimulants of all kinds are, as a rule, to be avoided. I am sure that patients with cancer are better without them; anything approaching a free use of alcohol adds greatly to the activity of the disease. All of us must have been impressed with the malignity of cancer in the intemperate. Patients in our Cancer Charity are allowed to go home occasionally, either for special business or family reasons or for a "holiday," as it is called. They usually come back the worse for the change, and we are generally able to trace this to indiscreet indulgence in alcohol. To mention a concrete case: there is a man under my care now with an extensive epithelioma of the mandible. Last summer he was granted permission to go home for a few days to attend to urgent business matters. He came back to us quite a different man, looking haggard, suffering much pain, and the growth was more active and ulcerative. This was all the result of a free indulgence in alcohol; he is now in a very different state, but he has never got quite back to the condition he was in before that ill-starred "holiday."

I have seen much ill follow the use of alcohol in cancer, and I never order it for this disease. But I very occasionally allow it to be taken. A patient with extreme distaste for food can sometimes be induced to take food if allowed to sip a little beer or wine; in such a case the beer must never be given instead of food, but only as an adjunct to food. Again, some patients have a great craving for stimulants when feeling very weak, and they beg to be allowed to take some; others are so accustomed to take beer or wine with their food that they protest they cannot eat without it. I find that most of these patients only want a little management, and to understand that in no case will the alcohol benefit their disease, to consent to go without it; but some will not without an undue restriction upon their liberty and happiness.

We all know the force of an appeal coming from one suffering from an incurable malady, whose days here are numbered; unless it is wholly unreasonable we have sometimes to yield. But I wish to make my position in this matter quite clear: I do not regard alcohol as helpful in the treatment of cancer, I believe it to be prejudicial and to make the disease more active and more distressing. I should never order it, and I should only consent to its being taken under special circumstances, and then only in small quantity.

As to sedatives and anodynes, they undoubtedly have a place in the treatment of this disease. Opium and its derivatives I use as sparingly as I can. I have seen cases where the ill-effects of morphia have been more distressing than those of the cancer for which it was prescribed. The patients in our Cancer Charity have little morphia; it is a common event for not a single hypodermic injection of morphia to be given to any one of our 90 patients. Aspirin is given to many of the patients, phenacetin to others; many have a dose of nepenthe at night. Opiates are generally given in the form of the solution of morphia, or of nepenthe by the mouth, or of small suppositories of morphia; only occasionally is a hypodermic injection of morphia used, and we aim at keeping down to a minimum our use of this drug.

When I first saw the practice in our cancer wards—more than 30 years ago—the custom was to prescribe both alcohol and morphia freely; now both are used sparingly, if at all. The difference in the wards is quite remarkable; the patients then suffered far more, and were more irritable, fractious, and difficult to deal with. Now we have no disciplinary trouble, and the patients are far happier and more comfortable. Had I not seen the two systems tried, and myself witnessed the difference in results, I could hardly have credited the value of our present practice as contrasted with that of our predecessors.

Regulation of the Bowels.

Under this division of my subject, there is only one other detail I must refer you to, and that is attention to the regular action of the bowels. It is most important for the comfort of these patients that the bowels should act regularly every day, or at most, every other day. Constipation adds most markedly to their distress; in no case is this more marked than in uterine cancer. I need not here discuss the relative value of the various aperients; I will only say that purging is to be carefully avoided, and the value and harmlessness of a carefully given enema not forgotten.

To sum up, then, the general treatment of late cancer, I should say it should consist in the avoidance of all fatigue, strain, and worry, the observance of strict cleanliness, care and moderation in diet, the proper regulation of the bowels, abstinence from stimulants, and the minimal use of opium and its derivatives consistent with the reasonable comfort of the patient.

PALLIATIVE OPERATIVE MEASURES.

There are certain palliative operations for incurable cancer that may be practised with considerable advantage in properly selected cases. They have received a good deal of attention from surgeons and I need not deal with them at great length.

Gastrostomy.

In my experience gastrostomy is a most valuable procedure in cases of malignant stenosis of the gullet. I prefer Senn's operation, in which the inversion of the stomach wall is used to make a valvular opening into the stomach. I recommend this operation as soon as patients can swallow only fluids; the operation is attended then with very little shock or other danger, food is introduced into the stomach from the first, and the patient very quickly improves in comfort and strength. He is able to feed himself without difficulty or leakage, and not infrequently resumes his work. He may recover some of his lost power of swallowing, life is prolonged for months, sometimes for years, and the patients are spared the pains of death from starvation.

There is in the Cancer Charity at the present time a man who was transferred in January, 1912, from one of the homes

for the dying (Friedenheim), with advanced epithelioma of the gullet 15 inches from the teeth; he could swallow thin fluids only, and was greatly emaciated and weak. I performed gastrostomy for him, and he is now well nourished, even plump, free from all discomfort, and he has so far recovered his power of swallowing that he takes finely minced meat and vegetables, bread-and-butter, and milk puddings per os. He uses the tube into his stomach at least once a day. The œsophagoscope shows the annular growth very little, if at all, altered. He is up and about all day and is quite fit for light work; under the terms of the Charity he is, however, eligible for residence with us, as the disease is still present.

It is important to feed these patients on a mixed diet, and where a large tube is used this offers no difficulty; I employ a rubber catheter, No. 18, English scale. Through that, not only milk and egg, but finely pounded meat, vegetables, fruit, and bread-stuffs can be given. If the food when prepared is passed through a sieve of proper mesh there is no fear of blocking of the tube. Gastrostomy has, I know, been condemned, but I am convinced that it is a good operation; it gives great comfort and no little prolongation of life, it does not incapacitate the patient, and is unattended with annoyance.

Colostomy.

Colostomy for irremovable cancer of the colon or rectum is still the subject of discussion and difference of opinion. I am in favour of the operation when there is marked obstruction, severe pain connected with the passage of motion over the ulcerated surface, or free hæmorrhage from the growth. In these circumstances it prolongs life, saves the patient from the distress attending complete obstruction, and lessens pain. In the best cases there is very little trouble connected with the artificial anus, and the patient can follow his employment and is in no way cut off from society. All cases are not "the best," however, and we sometimes have a good deal of trouble with the artificial anus, difficulty in securing the proper evacuation of the bowel, much discharge, and not great relief of pain.

I do not advise the operation as a routine measure in all cases of irremovable cancer of the rectum; many of these cases can be helped through their difficulties to the end without the operation. It should be employed only when there is definite indication for it, but I have seen such very great relief and benefit follow this operation that I cannot but advise patients to consent to it, and I could not join in the general condemnation of the operation that we sometimes hear. I have already referred to the need for regular and careful cleansing of the bowel below the colostomy, other details I must not stay to refer to now.

Cystostomy for Cancer of the Bladder or Prostate.

This operation is sometimes of value. I have a very clear recollection of one case, however, in which apparently it afforded no relief to the patient's sufferings; on the other hand, I recall several patients who expressed themselves very grateful for the ease it gave them. It is especially indicated where the growth bleeds and clots are passed with great difficulty and pain, and where micturition is very frequent and agonising.

The application of an electric cautery to the neck of the bladder is another means of affording considerable relief to cases of cancer of the prostate where the growth is blocking the urethra, and the use of a soft catheter is either attended with great pain or is impossible.

Gastro-enterostomy—Neurectomy.

Gastro-enterostomy in cases of irremoveable pyloric cancer is generally attended with great benefit and notable prolongation of life. It is a good operation, well worth doing.

Neurectomy for the relief of severe pain in properly selected cases certainly has a place in surgery. The last case in which I employed it was that of a woman under my care in Queen Mary Ward last June; she had had her right breast amputated for cancer in January, 1911, and when she came under my care she had an extensive recurrence in the neck of the same side, which by pressure upon the nerves of the brachial plexus caused *very severe* and continuous pain in the whole of the upper limb. She had no sign of deeper recurrence. In that case I performed cervical laminectomy and divided the posterior roots of the nerves from the third cervical to the second dorsal inclusive on the right side. She lost her pain entirely and expressed herself as very grateful for the relief, which continued up to the time of her death in July.

Paracentesis.

Paracentesis either of the pleura or peritoneum is a simple operative procedure often attended with great benefit. As a rule, the fluid re-collects and sometimes very rapidly, but this is not always the case. I should postpone tapping until the pressure of the fluid is causing marked dyspnœa or abdominal distress, but at that point the relief afforded is very welcome to the patients.

As an example of the value of this procedure and of the remarkable results occasionally obtained, I may mention a case I saw in consultation with Dr. W. H. Bourke. The patient was a married lady, aged 43, whom I saw first in June, 1909. She was sitting up in bed suffering from extreme dyspnœa; the right chest was dull all over and entirely immobile; the heart's apex beat was felt in the left axilla. She was very emaciated, and the right mamma was the seat of a small atrophic scirrhus for which she had never sought advice. I punctured the right pleura and drew off a wash-basin full of serous fluid; the relief afforded was immediate and very great. In a month I was called in again, as the dyspnœa had recurred, and I then drew off nearly the same quantity of fluid from the right pleura. I had to tap the right pleura again on Sept. 28th and in December. On Jan. 20th, 1910, I was summoned in a great hurry and found the lady in really very urgent distress; the dyspnœa was even more alarming than before, and I now found signs of fluid in both pleuræ. From the right pleura I drew off about two pints, and from the left pleura three pints. She was again at once completely relieved. *From this date no further collection of fluid occurred in either pleura;* the right side of her chest gradually contracted down and eventually became quite dull and immobile, and no breath sound was audible in it—the result of cancerous growth. The left lung and pleura were unaffected. Soon after the fifth and last tapping of the pleura we found that fluid was accumulating in the peritoneum; this was drawn off with Southey's tubes on many occasions, but at increasing intervals during the next 12 months. This lady died in May, 1912, very nearly three years after I was first called in to relieve urgent distress from a very large pleural effusion caused by cancerous metastasis. During nearly the whole of this time the lady was able to get up, to walk and drive about, to meet her friends, and to travel. It is the most remarkable case of the kind that I have yet seen. I have seen others where a pleural effusion due to malignant disease has not recurred after one or more tappings. I mention this because I think the general impression is that the fluid re-collects so quickly and so surely that it is hardly worth while to tap these patients; in many cases this is not so, and the fact should not be assumed.

The remarkable relief of pain, of vomiting, and of optic neurosis in cases of cerebral tumour afforded by *decompressing operations* is well known, and I need only to mention it as one of the operations to be advised in cases of irremovable malignant disease.

The operation of *lymphangioplasty* has been in my experience a disappointing procedure, and I doubt if it is worth doing.

Diathermic Coagulation.

By the use of an extremely rapid oscillating electric current in such quantity that it produces great heat the tissues can be immediately coagulated to a distance of half an inch or more from an electrode. By this means we can remove sloughing and ulcerating growths without pain and without hæmorrhage. The electrode should be in the form of a blunt knife. The coagulated tissues can be scraped or cut away while the patient is still under the anæsthetic, or can be allowed to separate. The absence of all bleeding makes this method of removal much superior to all forms of curettage or cauterisation.

There is probably a somewhat wide field for this modern application of electricity. The current employed is very much stronger than has been used before for man; it can only be obtained where an alternating current is available, and where the services of an electrical expert can be obtained. Such a powerful means of producing instant coagulation of tissue must of course be used with care, and the ease with which it can be employed, and its bloodlessness, must not make us unmindful of the limitations which must be observed in its application.

I must now, in conclusion, say a few words about

OTHER THAN OPERATIVE MEASURES

for the cure of malignant disease. The number of remedies that have been vaunted for this purpose is legion, and they are added to almost daily. I fear that they are nearly all of them entirely valueless. I will not take up your time with enumerating those I have tried, or seen tried by others, without any benefit, and will limit myself to what I know about Coley's fluid and "gamma radiations."

I have not myself had any success with Coley's fluid, nor have I *seen* any case where it has effected a cure in what was *known* to be a case of malignant disease. But that such cases have occurred in Dr. Coley's hands I fully believe, and others, too, have had very occasional happy experience with this remedy—I may refer to a very excellent result of its use in the case of melanotic sarcoma recorded by Dr. H. H. Greenwood in THE LANCET of Sept. 28th, 1912.

Gamma Radiations.

Of the gamma radiations produced by the X ray tube or by radium I can speak with much more satisfaction. These radiations can undoubtedly inhibit cell growth, and they seem to have a special power over cancer and sarcoma cells, and, more than this, they have the power of destroying malignant cells. We have not yet been able to employ them in such a way as to obtain uniformity of result, and even the locality of disease seems to influence the effect produced, for epithelioma of the tongue, of the floor of the mouth, of the gums, and of the pharynx is not so amenable to these radiations as are similar growths in some other situations; secondary deposits in glands are not favourable for this method of treatment. I have seen these radiations remove with remarkable rapidity a large portion of an epitheliomatous growth affecting the palate and pharynx, and entirely fail to affect in any way another part of the same growth, which advanced and destroyed the patient just as if no radium had been employed.

Limiting myself to what I have myself seen of the results of gamma radiations in malignant disease I can say this. By the use of X rays in cancer of the breast I have seen foul ulcers cleaned, some ulcers have healed up entirely; I have repeatedly seen small secondary nodules in the skin and fascia disappear; I have had several cases where larger and deeper secondary growths involving muscle, ribs, rib-cartilages or sternum have disappeared, and in other cases such growths have remained stationary and quiescent for such long periods that I could only think the radiations had had at least an inhibitory influence upon the growth. But in view of the extreme and remarkable natural variations that occur in cases of cancer, apart altogether from treatment, I desire to speak with great reserve upon this point. In my Bradshaw lecture on Cancer, delivered in 1910, I related the case of a postman whose rectum had been excised in another hospital and who was sent on to the Middlesex Hospital Cancer Charity with a large ulcerated recurrence at the scar in the sacral region. Under the use of X rays this entirely disappeared, and he resumed his work as a postman. He was seen last November (1912), and was then quite free from all sign of the disease.

I suppose we have all seen cases of rodent ulcer that have quickly yielded to either X rays or radium, but the strange thing is that some rodent ulcers, apparently of the same character, prove quite refractory to one or to the other of these agents, and some are refractory to both. I have under my care just now a man with a large rodent ulcer at the root of the nose which had been treated for a long time with X rays without any benefit. I have had him treated with radium, and the disease has very rapidly disappeared, and the ulcer is all healed with the exception of a perforation into the left nasal fossa. As a pendant to this, I may mention another case of rodent ulcer which failed to benefit from radium, and then rapidly healed under X rays.

Some Cases Treated by Radium.

Among cases treated by radium I may mention the following:—

CASE 1.—Mrs. A, aged 44, came to me in December, 1911. She brought a letter stating that in 1906 a benign cysto-adenoma of one ovary had been removed. In 1908 a solid tumour of the other ovary was removed and unfortunately the specimen was destroyed before a microscopic examination had been made. Infection of the wound occurred and there was prolonged suppuration; healing was accompanied with the development of a solid lump in the abdominal wall. In November, 1911, the surgeon operated again, hoping to be able to remove the tumour in the abdominal wall; this he found to be impracticable. A portion excised was found to be adeno-carcinoma. When I saw the patient a month after this last operation there was a considerable tumour of the abdominal wall, fixed to the pelvis below, and over its centre was an irregular ulcer the size of the palm of the hand; in each groin were firm enlarged glands. In December, 1911, and again in January, 1912, she had a full pastille dose of X rays; subsequently she was treated with radium at the Radium Institute on four occasions. After the first radium treatment the ulcer healed; later the growth rapidly diminished in size, and now has entirely disappeared, and concurrently with this the patient has very nearly regained robust health.

CASE 2.—Miss B, aged 66, consulted me first on Oct. 8th, 1912. She had just been told that she had a malignant growth in the left superior maxilla, and its removal by operation had been recommended. I found a tumour bulging the left cheek, projecting between the cheek and the gums of the left upper jaw, slightly raising the floor of the orbit and filling the upper part of the left nasal fossa, from which there was a blood-stained discharge. Transillumination showed the left antrum to be quite opaque. Beneath the body of the lower jaw on the left side was a firm enlarged gland of the size of a large horse-bean. The patient absolutely declined operation, but consented to try radium. On Oct. 15th Mr. A. E. H. Pinch, of the Radium Institute, supplied me with a tube of radium emanations, equivalent to 96·5 mgr. of radium, and I introduced this into the growth through a small incision under the left cheek; it was left *in situ* for 20 hours. On Nov. 5th a tube of emanations equivalent to 117 mgr. of radium was introduced in the same way, and left *in situ* for 25 hours. The result of these two applications of radium emanations was the rapid disappearance of the primary tumour. There is now nothing abnormal to be seen in the nose and nasal respiration has again become quite free, the swelling of the cheek and inside the mouth is gone, and the translucency of the antrum is distinctly greater than it was. There was no improvement in the glandular swelling; indeed, it increased rather rapidly, and I induced the patient to allow me to remove it. This I did on Nov. 12th. (She was seen on Jan. 13th, 1913; there was no evidence of growth either in the jaw or the neck, but there is some opacity of the antrum and a discharge of blood-stained mucus from the left nostril.)

CASE 3.—On March 29th, 1912, Dr. E. C. Andrews, of Hampstead, asked me to see Mr. C, aged 55, with a tumour of the right parotid gland. He had noticed it only a few days before quite accidentally. It was a nodular mass filling the space between the mastoid process and the mandible, and projecting below and behind the pinna; it was absolutely fixed deeply, but the skin was movable over it. There were no enlarged glands to be felt. The patient was very closely occupied in the City, but he has had several applications of a plate of radium at the Radium Institute, and the result has been that there has not been any increase in the swelling, no development of facial palsy or other untoward symptom, and the growth is very much smaller than it was—its superficial measurements are reduced to about one-half.

CASE 4.—Mr. D, a youth aged 18, was brought to me in May, 1912, by Mr. F. G. Bergin, of Bristol. He had a commencing periosteal sarcoma of the shaft of the right femur. It formed a deep elongated swelling on the front of the femur about 5 in. long, involving about one-third of the circumference of the bone. The upper and lower edges of the swelling were abrupt. Dr. Bergin's skiagram of the thigh showed a shadow characteristic of periosteal sarcoma. On May 10th I exposed the tumour, cut out a fragment for microscopical examination, and then embedded in the tumour a tube containing 100 mgr. of radium supplied by the Radium Institute, and removed it 25 hours later. I repeated this on June 28th, but used on this occasion a tube containing radium emanation equivalent to 100 mgr. of radium. I again removed a fragment of the growth for microscopic examination. The first specimen was reported by Mr. Gordon Taylor to be a typical spindle-cell sarcoma; the later specimen was reported to show very marked degenerative changes in the cells, and to be clearly different from the

first. There has been no increase in this tumour since the first application of radium. In October Mr. D resumed his studies at the University of Bristol, and he walks without pain or lameness.

CASE 5.—In December, 1911, I was asked by Mr. M. S. Duke to see a young lady with a malignant growth in the right groin. The tumour was not of a great size, but it was deeply fixed to the pelvis and the muscles attached to it, and to the common femoral vessels. It was deeply ulcerated, and the ulcer was so deep and so close to the main vessels that I feared fatal hæmorrhage might soon occur. There was considerable œdema of the whole limb. I could not detect any secondary growth. I advised a trial of radium; this was made. I have not seen the lady again, but last autumn I had a letter from her mother, telling me that her daughter was quite cured, the wound in the groin was healed, the swelling had disappeared, and she was in good health and walking freely. Mr. Duke writes under date of Jan. 14th, 1912, "The patient is quite well."

CASE 6.—In 1909 I was asked to see an elderly lady who was suffering very severely from secondary carcinoma mammæ. The left mamma had been removed years before, and there had been several subsequent operations for local recurrences. When I saw her she appeared to be in great agony from pain referred to the distribution of the left ulnar nerve—pain unrelieved by anodynes and which destroyed all comfort by day and prevented sleep at night. I found a deep and firm growth fixed to the coracoid process of the left scapula. I negatived further operation and advised a trial of radium. This was applied by Mr. N. S. Finzi, and immediately after the first application the severe pain entirely passed away and never returned. Further applications of radium were made. I could not satisfy myself that the growth diminished in size, a difficult matter to determine, but it certainly did not disappear. But during this time epithelioma of the vulva developed and ran a rapid course in spite of the use of radium to it, and caused her death.

I need not add records of any other cases, for these suffice to show the power and some of the limitations of this mysterious agent. The cure of the less malignant rodent ucler is so frequent and so well known that I have not thought it necessary to include the notes of such cases in my short list.

Advances in Connexion with Gamma Radiations.

I think we can say two things about these wonderful gamma radiations—whether produced by the X ray tube or by radium—the dose must be a strong dose, and the radiations must be brought as close as possible to the affected tissues. An occasional small dose of X rays or the application of a few milligrammes of radium is of no use. For other than surface growths the radium or its emanation should be introduced into the growth.

A great advance has recently been made in connexion with the employment of radium, in the discovery of means of collecting radium emanations within metal tubes, or on metal wires, which are then for a short time as potent as the radium itself. Radium is so scarce and so enormously expensive that its use for a very common disease like cancer is necessarily much restricted, but now that its emanations, which are constantly being given off from it and which do not materially impoverish it, can be caught and employed as effectively as the metal itself, there is reason to hope that this method of treatment can be made much more generally available.

I have used both radium and radium emanations, and have found the one quite as useful as the other; this is a most important addition to the therapeutic use of this wonderful metal.

Interesting work is now being carried out in connexion with X rays, which may possibly add enormously to the usefulness of this much cheaper and more available source of gamma radiations.

It is believed that the good effects of X rays and radium are produced in the same way—by the generation of secondary beta radiation, which is an electric discharge associated with the production of fresh gamma radiation, and that these fresh gamma radiations are the real therapeutic agent. When the radiations from radium or from an X ray tube strike a metal, a definite amount of such fresh gamma radiation is produced from each molecule of metal, and the amount varies with the different metals, but seems to be always the same for each molecule of the same metal. This fact is now being employed to regulate the dose of gamma radiations with more exactness than has hitherto been possible, and also to generate the gamma radiations in immediate contact with deep malignant growths. For instance, sterilised carbonate of bismuth or one of the vegetable salts of silver can be introduced into or around a cancerous growth, and the part subsequently exposed either to radium or X rays. By this means fresh gamma radiations are produced in or immediately around the deep growth in definite amount. It is hoped that by this means we shall greatly improve our results with X rays. I am using bismuth for the purpose. I have injected it around malignant glands in the neck, into a large parotid tumour, around deeper growths in the chest wall, and I have exposed malignant glands in the iliac fossa, smeared a bismuth paste over them, and closed the wound and exposed the part afterwards to the emanations of an X ray tube. The bismuth or other metal can be introduced into the uterus or rectum with the same object.

It is too early for me to speak definitely of results, but they are at any rate very hopeful. To illustrate the fact upon which this line of treatment rests, I may mention a case that impressed very much all who saw it. A gentleman was being treated for an affection of his left hip by a plate of radium applied over the part. Unfortunately, care was not taken to remove the keys that he carried in his right-hand trouser pocket. The result was that he had a very severe burn on the right thigh which took months to heal.

I am aware that there is very much to be desired in our treatment of malignant disease, but I believe I have justified my opening protest against the statement that we "give up" cases of advanced cancer and "can do nothing for them," and I am full of hope that in the near future the whole aspect of this question will be so changed that some future "Purvis orator" will discuss the cure of cancer with as much confidence as we can now speak of the cure of tubercle or of syphilis.

The Milroy Lectures

ON

THE ETIOLOGY OF ENDEMIC GOITRE.

Delivered before the Royal College of Physicians of London on Jan. 7th, 9th, 14th, and 16th, 1913,

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LECTURE II.[1]

Delivered on Jan. 9th.

MR. PRESIDENT AND GENTLEMEN,—My previous lecture determined with the conclusion that water is capable of conveying in some manner the toxic agent of goitre. It is my intention to-day to examine more minutely the nature of the goitrigenous agency in water and to consider whence it is derived. Since the toxic agent of the disease exists in water it must be present in a state either of solution or of suspension. In either case it is derived from the rocks or soil with which the water comes in contact.

THE INFLUENCE OF SOIL.

An immense amount of most painstaking research has been conducted in the hope of finding in some property or constituent of the soil an explanation of the origin of goitre.

Many observers have attached much importance to *humidity of the soil;* especially Fodéré, who at one time regarded a damp soil as the most essential factor in the production of the disease. Macnamara also, in India, laid such stress on the frequency with which goitre was associated with damp and marshy soils, that he attributed to the disease a malarial origin, an opinion which was also held by Tourdes, Morel, and others. It is true that goitre does commonly occur on damp, marshy soils, but it also occurs on

[1] Lecture I. was published in THE LANCET of Jan. 18th, 1913, p. 147.

the driest soil and in some of the most arid parts of the world. A damp, unhealthy situation may, however, favour the development of goitre in the same general way that it may favour the development of many other endemic diseases. There are many instances in the literature of the beneficial effects of good drainage, as, for example, in the outskirts of Strasburg, where "as a result of drainage and the disappearance of the marshes the disease was markedly reduced" (St. Lager).

GEOLOGICAL STRUCTURE OF THE SOIL AND ITS RELATIONSHIP TO GOITRE.

It is to the geological structure of the soil, however, and its possible relationship to goitre, that the greatest amount of research has been devoted. Very great importance has been, and is, attached to this aspect of the soil's connexion with the disease, an importance due largely to the work of Billiet, McClelland, Grange, St. Lager, Berry, Bircher, and more recently Répin. But the results arrived at by these observers, though they may be true of the district in which the observations were made, are not always applicable to goitre as it is found to prevail in other countries.

Of the work of these observers I propose only to refer to the results arrived at by Bircher in Switzerland. This observer has concluded: 1. That goitre occurs only upon marine deposits and especially upon the marine sediments of the Palæozoic, Triassic, and Tertiary periods. 2. That the eruptive rocks, the crystalline rocks of the Archæan groups, the sediments of the Jurassic, Cretaceous, and post-Tertiary seas, as well as all fresh-water deposits, are free from the disease. He affirms that where goitre appears on the rocks of the second group the affected outcropping stratum has only a moderate density, and has as a basis one of the formations mentioned in the first class, so that the sources of the springs extend down to them. Or, on the other hand, endemic centres of goitre are to be found in isolated islands composed of rocks of the first class, on which in other parts of the world where these formations appear in large ranges goitre is endemic. He considers also that the influence of the rocks of the first class is often weakened, or made to disappear, through superimposed fresh-water strata. Bircher, by extending his studies to other European countries, convinced himself that goitre occurs especially on rocks of the Silurian, Devonian, Carboniferous, and Permian systems.

Now while there can be no doubt that goitre is very much more commonly associated with limestone and dolomite formations and with marine deposits generally, this association is not a constant one. It must be admitted that not only are these formations often free from the disease, but also that *goitre can and does prevail on almost every other geological formation from the most ancient to the most modern.* Bircher's teaching, that the eruptive and other rocks mentioned in the second class are free from the disease, is erroneous. Goitre is undoubtedly rare on these rocks, but it cannot be affirmed that they are goitre-free. As long ago as 1848 the Sardinian Commission found that no formation excluded the occurrence of goitre and cretinism, but that endemics were to be met with more frequently on the older than on the more recent formations.

Berry has pointed out that Jurassic and Cretaceous rocks are, in England, not wholly free from goitre. Kocher, also, has shown that the Jurassic formations and fresh-water deposits are not exempt in the neighbourhood of Bern. Chatin has brought forward many illustrations to show that goitre is found on volcanic earths, on granite, on oolite limestone, on marl, on alluvial deposits, &c.—in short, on soils of all kinds; while St. Lager also has cited a great number of places where goitre occurred without any connexion with dolomite rocks. Hirsch also has been led to the conclusion that goitre occurs on all geological formations, but that it is met with on all the older formations, including the Trias, more frequently than upon the more recent.

My own experience in Chitral and Gilgit has led me to conclude that no geological formation excludes the occurrence of goitre. In parts of Chitral the disease is very much more common in certain villages situated on limestone rocks, and the fact is so striking that it is difficult to avoid the conclusion, arrived at by McClelland in the Himalayas so many years before my time, that it was almost possible by studying the characters of the neighbouring rocks to predict whether or not the inhabitants would be afflicted with goitre. But more extended acquaintance with the disease soon taught me that not only were limestone rocks often exempt from the disease, but also that it prevailed in abundance in villages situated on granite rocks. In the 80 miles of country between Gilgit and Astore there is hardly a village in which goitre is not common, and often cretinism also, yet the whole of this country is made up of an "igneous complex composed of several varieties of granite" (MacMahon).

With the assistance of Mr. Hayden, of the Geological Survey of India, I have made a minute microscopical and chemical examination of the soils of certain villages in Gilgit. It was found that the amount of lime, magnesium, or iron in these soils bore no relationship whatsoever to the extent of goitre amongst the villagers living on the soil. In the soil of the most goitrous village lime was found in considerably less amount than in that of another which was free from the disease; while iron was present in the soils of all villages in such small amounts as to render it most unlikely to be the cause of disease of any kind. Even in soils in which iron was found in rather more marked quantities the excess did not correspond with any excessive prevalence of goitre amongst the inhabitants.

Baillarger, in his masterly review of the whole subject in 1873, concluded that "it had not been shown that goitre prevailed exclusively on any particular soil, but that it seemed to prove that the endemic is extremely common on the dolomite formations and rare on others." This conclusion needs no modification even at the present day.

CHEMICAL SUBSTANCES IN WATER AND THEIR RELATIONSHIP TO GOITRE.

Analyses of goitre-producing waters—of which there are probably thousands on record—have failed to show that dissolved salts of lime, magnesium, or iron can be regarded as the essential cause of goitre. I, myself, have been unable to trace any definite relationship between the amount of goitre present in any village and the amount of any single dissolved ingredient in its water which can be detected by chemical tests.

Goitre is found in villages where the water is hard and contains lime and magnesium in abundance, and in villages where it is soft and contains these mineral ingredients in very small amounts. It is absent also in many villages where the water is very hard; and the literature provides many examples of this truth. Indeed, it is affirmed by some observers that there are springs containing chalk and magnesium in large amounts which not only do not cause goitre, but under whose use goitre actually disappears. Zschokke has recorded that this is true of the Betherstein water, and Christener that the Weissenberger hot lime waters possess a curative property. I have, however observed in Gilgit and Chitral that amongst the inhabitants of goitrous villages where the water was very hard the individual goitres were, as a general rule, larger and more degenerated than in neighbouring villages where the water was softer—a fact which may not be a coincidence only. It may be that a hard water will favour the action of the goitrigenous agency, but such waters are not capable by virtue of their hardness alone of causing goitre. It is interesting to record the fact that Grange himself, who was the author of the "magnesium theory" of the disease, abandoned the view as a result of his more extended geological researches.

Baillarger, surveying the whole subject in the year 1873, arrived at the conclusion that "chemical analyses do not support the view that goitre is due to the presence of chemical salts in the water." Nor is this view supported by experiment. Goitre is not observed to result from the administration of salts of iron over long periods of time to anæmic girls, nor can the salts of lime, magnesium, iron, potash, or soda give rise to the disease when administered to animals under experimental conditions. The brothers Berry failed to notice any changes in the thyroid glands of guinea-pigs, either by macroscopical or microscopical examination, as a result of feeding these animals on the chemical salts mentioned for a period of nine months.

Of late years, however, the view that goitre is due to some substance dissolved in the water has been revived, and the supporters of this view are seeking to find in radio-active substances, especially radio-thorium, fresh support for their theory. According to Répin, goitrigenous waters have a high carbonic acid content, by virtue of which carbonates and sulphates of lime and magnesium are held in solution.

He considers also that the radio-activity of a mineral water may have an influence in the production of goitre. He believes that all goitrigenous waters are true mineral waters of a peculiar kind, and holds that their points of exit from the earth's interior—for such waters must come from great depths—are to be found in the lines of dislocation of the lithosphere, and by preference in the most recent or those which have not yet had time to become obliterated. He considers that these waters exercise on the general metabolism a powerful action of which the thyroid hypertrophy is only the reverberation. He bases his hypothesis on the work of Senator, Leopold-Lévi, de Rothschild, and others, who have shown that the thyroid mechanism controls the metabolism of lime. He explains the enlargement of the thyroid as an effort on the part of the gland to maintain, by augmenting its secretion, the chemical balance of the organism in the presence of a state of hypercalcification, induced by the use of water containing lime. His experiments on rats have confirmed him in this opinion. (Fig. 13.[2]) He has recorded that even heating the water to 100° C. for several minutes does not deprive it wholly of its goitre-producing properties. He believes prolonged boiling, or expulsion of its carbonic acid content, to be necessary to cause a precipitation of the dissolved salts on which, in his opinion, the goitre-producing properties of the water depend.

The views of Répin may be summed up thus: That goitrigenous water is invariably mineral water; that in this water exists some chemical ingredient—possibly salts of lime and magnesium, possibly radio-active substances—which is the active principle in the production of goitre and resists a temperature of 99° to 100° C. for several minutes. Now Wilms has shown that water raised to a temperature of 70° C. loses its toxic properties, and this result is in conformity with my own findings and those of Bircher, Breitner, Lobenhoffer, and others. But even if a temperature of 100° C. did not destroy the toxic agent of the disease, the fact would not exclude the possibility of an infective agent as the cause of goitre. I have, for example, isolated from the fæces of sufferers a spore-bearing bacillus which not only resists boiling for several minutes, but also exercises a curative influence on the disease when employed as a vaccine. The fact that Bircher has produced goitre in rats by means of water filtered through a Berkefeld filter might be quoted in support of Répin's views, but here again such treatment of the water is not sufficient to exclude the possibility of an infective agent, since this method of filtration does not render the water sterile. I am not prepared, therefore, to accept as final Répin's view as to the effect of heat on goitrigenous water.

Nor am I able to agree with his view that the goitre-producing properties of a water may be due to its radio-activity. Répin holds that goitrigenous waters are amongst the purest known, but he has advanced no bacteriological observations in support of a statement of such moment. The bacteriological researches of the Swiss Goitre Commission have proved that such waters almost invariably show an infinitely higher bacterial content than innocuous water, and we know that in radio-active waters the bacterial content is low. My own experience is in direct opposition to that of Répin, and exactly parallel to the results of the Swiss Commission. I am also informed by Professor Kolle that this Commission has failed to confirm in Switzerland Répin's supposition as to the radio-active properties of goitre-producing waters.

The lime and magnesium theory has already been dismissed as untenable, and in answer to the claim that goitre is due to the mineral character of the water, I have the authority of Dr. Cresswell Howell, of Bega, in New South Wales, for stating that goitre, to his personal knowledge, occurs in this locality, where the only source of water-supply is rain, while Veichardt mentions the case of the people of Eichstätt who are goitrous, though they drink rain water only. Similarly, in other goitre-infected regions the only drinking water is derived from snow, a fact responsible for the popular belief whereby goitre is attributed to the consumption of snow water. There are also recorded instances where the disease has arisen in persons drinking distilled water only. In this connexion I would refer again to the outbreak of goitre in the Bishop Cotton School at Simla, where whatever may have been the cause of the disease it certainly was not the water-supply, and this is only one of many similar instances with which the literature supplies us.

[2] This figure and Figs. 6, 7, and 8 will be printed together with others as a separate plate.

While, therefore, I would not go so far as to deny that the peculiar waters with which Répin is dealing may possess some quality which tends to excite the functional activity of the thyroid gland, it is immediately obvious that the explanation offered by him cannot be accepted as a complete and satisfactory theory of the origin of the disease.

Two main facts emerge from a study of the geological relations of the soil to goitre—viz., (1) that the disease appears to show a preference for certain soils; and (2) that it can, nevertheless, prevail on soils of any geological formation. Knowing, then, as we now do, that the essential cause of goitre is not a dissolved mineral ingredient derived from limestone soils, we must seek elsewhere an explanation for the connexion of the disease with the soil.

THE NATURE OF THE TOXIC AGENT OF GOITRE.

Such an explanation must involve some prior determination of the nature of the toxic agent of the disease.

Now the arguments upon which is based the explanation I have to offer rest upon a consideration of the behaviour of the endemic itself, upon deductions drawn from authenticated outbreaks, on my own observations in endemic centres, upon the conclusions to be drawn from the valuable work of Marine and Lenhart, who have studied the disease as it occurs in artificially bred trout, and finally upon my own experiments on man, and still more recently Bircher's on rats.

In a previous section dealing with the behaviour of the endemic we arrived at the conclusion that the evidence pointed to the existence of a living excitant. Nor can any other conclusion satisfy the difficulties presented by the outbreaks at Nagar and in the Boys' School at Simla, to which reference has already been made. To these instances I am able to add the experiences of Dr. Cresswell Howell, of Bega, in New South Wales. He has been kind enough to send me an account of an endemic of goitre in his district. The affected area is a stretch of undulating country about 30 miles long by 20 miles broad, and lies in a depression among high hills. The prevailing rocks are granite. The people are all of the farming class. The water-supply is rain water, which is collected from the roofs of the houses and stored in tanks. These tanks are only cleaned out on the rarest possible occasions. Dr. Howell informs me that he has examined the deposit in about 100 of these tanks and found it swarming with bacteria and animalcula of all kinds. A large number of young adults suffer from "a not very serious form of goitre." The swelling is invariably bilateral, gives rise to no pain, and rarely gives rise to symptoms. The goitre usually develops about the period of adolescence. Cretinism is also met with, but it is not of a severe type.

Here we have an endemic which, if it can be attributed to water at all, can only be due to the drinking of rain water which has become fouled by the washings from the dusty roofs and by its storage in dirty tanks. Clearly in this case, also, the disease is due to no dissolved ingredients, but to some living excitant, which finds in these tanks the necessary nutrient material for its life and growth.

Of my own observations, I will now direct your attention to those that deal with the village situated on the Gilgit Fan.

PREVALENCE OF GOITRE IN THE VILLAGES OF THE GILGIT FAN.

In the accompanying table I have indicated the prevalence of goitre in these villages, as determined by me in the winter of 1904. The figures are accurate, especially as

Village.	Population.	Houses.	Infected houses.	Per cent. of infected houses.	Per cent. of persons infected in infected houses.	Per cent. of total population goitrous.
1. Basin	93	15	9	60·0	21·2	11·8
2. Umphris ...	385	66	42	63·6	28·3	20·0
2A. Damyal ...	181	30	20	66·6	30·3	18·8
3. Majinpharri	718	108	68	63·2	24·2	20·0
4 and 5. Ky-K	229	33	23	71·5	30·0	26·9
3A. ½, 4A. ½ Sonyar ...	458	63	52	82·5	30·0	24·5
3, 3A. ½, 4, 4A. ½ Kashrote ...	128	24	21	87·0	36·0	45·6

concerns children and males; but as concerns women I had often to rely on the statements of their male relatives as to whether they were goitrous or not.

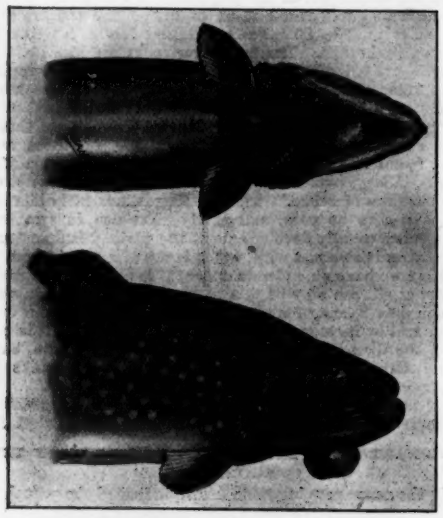
From this table it is seen that the percentage of infected houses, of infected individuals in these houses, and of the total population suffering from goitre, goes on increasing from the highest to the lowest village on the water-channels. In a paper which I read before the Royal Medical and Chirurgical Society of London in 1906, when describing the prevalence of goitre in these villages, I commented on the fact that where the polluted water of the main channel was joined by the purer supply from the Barmis spring the progressive increase of the disease was arrested.

The chemical composition of the water as it flows through the villages is the same as at its source. Only this difference could be detected in the water taken from the channel at Kashrote: it contained a larger amount of mineral matter in suspension, more vegetable débris, more amorphous matter, more animalcula, and on plate cultures it showed a much richer bacterial flora than the water at its source or higher up the kūl. It is, therefore, obvious that the increase in the disease bears a relation to the increasing organic impurity of the water, and we are again driven to the hypothesis that the toxic agent is a living excitant.

ENDEMIC GOITRE IN ARTIFICIALLY BRED TROUT.

Consistent with these conclusions are the deductions to be drawn from the paper written by Dr. Marine and Dr. Lenhart, and entitled, "Observations and Experiments on the so-called Thyroid Carcinoma of Brook Trout and its Relationship to Ordinary Goitre." These observers found that the so-called thyroid carcinoma was "severe endemic goitre." (Fig. 4.) Any peculiarity which the tumour in

FIG. 4.



Large external goitre in trout (Marine and Lenhart). ⅔ nat. size.

fish shows is due to the fact that the thyroid gland in fishes is not encapsuled, consequently as it enlarges it tends to grow into neighbouring structures.

I shall now quote those parts of Dr. Marine and Dr. Lenhart's paper which have a special bearing on the present subject:—

Our observations and experiments were made during October and November, 1909, at a large private fish hatchery in the mountains of Pennsylvania.

The arrangements of the houses and retaining tanks is quite simple. This is shown in the figure (Fig. 5). The tanks are arranged in a single series down the course of the brook. The water-supply is likewise simple. There is but a single spring supplying the upper six houses, while the lower five receive the water that has passed through the upper six, together with that from a second small spring and a 6 in. pipe line from a large stream about a quarter of a mile to the left.

On account of the increased water-supply, and for the clearer understanding of certain observations to be mentioned later, it is best to divide the series of tanks into an upper and a lower division. Between the upper and lower division of houses (that is, between Houses VI. and VII.) the water follows the original brook for a distance of about a quarter of a mile. Then it is again collected by means of a dam and enters the lower division of houses with the additions to its volume above mentioned. The water coming from the spring above all houses to the first house—a distance of about 50 yards—is also allowed to follow its natural bed. Apart from these two exceptions, the water is carried in covered raceways made of lumber.

Houses I., II., III., and IV. contain 8-months'-old fish. Houses V., VI., VII., and VIII. contain 1½-year-old fish, and Houses IX., X., and the first pair of tanks in House XI. contain 2½-year-old fish. The last pair of tanks in House XI. contains 1½-year-old fish ..... the three most important localities as regards the effect of water-supply and water pollution are Houses VI., VII., and the last pair of tanks of House XI., which contain fish of the same age—that is, 1½ years.

As a result of their examination of specimens of fish taken without choice from all the tanks, also specimens of different ages from the raceways above and below all houses, and lastly specimens of the larger 3½-year-old fish from the trout stream near by, the authors concluded that:

Fish which lived in the raceway above all houses and which have never been confined in the tanks maintain normal thyroids throughout their lives. Then, beginning with the series of tanks, it was shown that the 8-month-old fish are markedly affected even in the uppermost of all the tanks, and that there is a gradual increase in the degree of thyroid proliferation, which reaches its greatest extent and severity in the last house (VI.) of the upper division. Beginning with House VII. there is a marked improvement and lessening of the active thyroid proliferation coincident with the greatly increased water-supply and the probable purification of the water from the upper division in its passage for a quarter of a mile along the original bed of the brook. The improvement cannot be followed definitely throughout the remaining houses of the lower division, for the reason that the 2½-year-old fish are housed here, but the general impression is that this improvement is maintained throughout the remaining tanks to a gradually lessened extent. Lastly, the examination of the fish from the tail race, living wild, but in the polluted water, has shown that their thyroids are normal in type. Also examination of older fish obtained from both the tail race and the larger stream above the entrance of the tail race into it, have shown that, although the thyroid tissue has invaded all the structures beneath the pharyngeal mucosa at some past period of their lives, nevertheless, their stay of five to six months in a natural environment has effected a complete natural relief from the exciting cause or causes of the thyroid proliferation, and that the thyroids have resumed their resting or colloid state.

The authors conclude that "overfeeding, overcrowding, and a limited water-supply, are the major factors in the production of filthy, unhygienic tanks or ponds, and the unsanitary, unhygienic, and filthy tanks are in a very important but still unknown manner associated with the development of thyroid hyperplasia."

Gaylord's observations on goitre in fish are in complete agreement with the findings of Marine and Lenhart. He also has observed that where fish are confined in tanks situated one above the other, and through which the same water flows from one to the other, the prevalence of the disease increases markedly from above downwards. He gives the following table, which shows this increase:—

Water above the tanks	Fish goitre free.		
,, in first tank	3	per cent	goitrous.
,, in second tank	8	,,	,,
,, in third tank...	45	,,	,,
,, in fourth tank	84	,,	,,

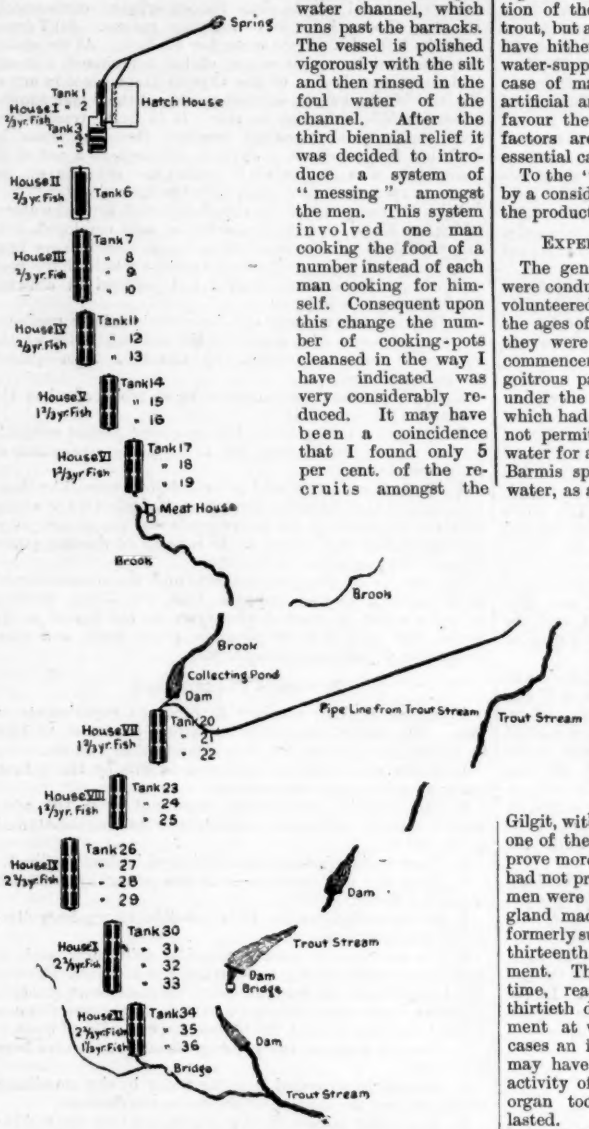
You will notice that the account of goitre in artificially bred trout corresponds in a remarkable way with my description of goitre in the eight villages of Gilgit, written in 1905. There is the same increased prevalence of the disease as the water becomes more polluted, and a diminution in the amount of the disease as a result of dilution of the impure water with the fresh spring water. The trout also conform to that striking characteristic of endemic goitre—viz., the capacity of spontaneous recovery on removal from the infected area. The markedly place-character of the disease, even in the case of these fish, is thus well illustrated.

Now, it is clear in the case of the trout that the influence of water in causing the disease cannot be doubted, and that whatever substance caused the disease remained behind in the tank. Anyone who has watched artificially bred trout in tanks will have observed their habit of "nosing" about the walls and bottom of the tanks. It is precisely in these places that suspended matter deposits itself. This deposit is made up of the remnants of food, and forms a nidus for the growth of numerous bacteria and animalculæ. I hold that it is in this deposit we must look for the causal agent of the disease, since it existed neither in the water flowing into the first tank, nor in that escaping from the last, in sufficient quantity to cause goitre.

Let us see what further evidence we have in this direction. I have stated that young soldiers who come to Gilgit frequently develop goitre within a few months. I have examined these soldiers for goitre on three different

occasions, about six months after the biennial reliefs. On the first two occasions it was noted that the recruits suffered to the extent of 20 to 22 per cent. On the third occasion only 5 per cent. were found to be goitrous. Now, it is the custom of the men to cook their own food, and for this purpose each man is provided with a large assortment of brass vessels. These he "cleans" by picking up a handful of silt from the bottom or sides of the open water channel, which runs past the barracks. The vessel is polished vigorously with the silt and then rinsed in the foul water of the channel. After the third biennial relief it was decided to introduce a system of "messing" amongst the men. This system involved one man cooking the food of a number instead of each man cooking for himself. Consequent upon this change the number of cooking-pots cleansed in the way I have indicated was very considerably reduced. It may have been a coincidence that I found only 5 per cent. of the recruits amongst the men goitrous, but I do not think so, and I am inclined to attribute the fall of the incidence of the disease from 20 to 5 per cent. to a lessened infection from the soil by way of cooking-pots and infected hands which followed as a consequence of the "messing" system. This system was, however, not popular amongst the men, so they reverted to their former habits of cooking, when I found that the percentage of goitre amongst the recruits again rose.

FIG. 5.



Semi-diagrammatic drawing of the plan, arrangements and location of the hatchery, water-supplies, houses, and retaining tanks. (Marine and Lenhart.)

Marine and Lenhart believe, as a result of their observations, that goitre is the symptomatic manifestation of a metabolic and nutritional disturbance, and that food is the major factor acting to bring about a fault of nutrition favourable for goitre development. Comparing their results with the conclusions to which we have already been forced, we may admit that whereas a "metabolic theory" of goitre is not inconsistent with some of the facts, it fails to provide an explanation for all. On the other hand, the "micro-organism theory" not only provides a satisfactory explanation of the development of the disease in artificially bred trout, but also of the experiments and observations which we have hitherto discussed. While recognising that a limited water-supply in the case of fish, or a limited air space in the case of man, over-crowding and over-feeding with a highly artificial and incomplete food, are factors which markedly favour the development of goitre, I am of opinion that these factors are of secondary importance only, and that the essential cause of the malady is a living organism.

To the "micro-organism theory" further weight is added by a consideration of the results of experiments directed to the production of goitre in man and in animals.

EXPERIMENTAL PRODUCTION OF GOITRE IN MAN.

The general conditions under which my own experiments were conducted may be summarised as follows: The men who volunteered for the experiments were young, usually between the ages of 18 and 25; they were newcomers to the district; they were under observation for some time prior to the commencement of the experiment; they lived in a non-goitrous part of Gilgit, not far from the village of Barmis, under the strictest guard; they were encamped on ground which had never been cultivated; they did no work and were not permitted to handle the soil; they were provided with water for all domestic purposes which was brought from the Barmis spring at its point of exit from the hillside; the water, as an added precaution, was boiled. In no case was the restraint imposed upon the men broken through. Water, purposely made muddy by agitation while flowing through its channel, was brought daily from the village of Kashrote where goitre is very common. It was filtered in large quantities through a Berkefeld house filter. The deposit on the candle was washed off in distilled water, and a quantity of the dark grey mixture, equal to about 4 oz., was given to each subject in milk every morning before the first meal of the day.

The first experiment was carried out in the spring of 1906. Six healthy young men, aged between 18 and 20, were the subjects. Two of these had formerly resided in Gilgit and had suffered from small enlargements of the thyroid. These swellings had disappeared on their leaving Gilgit, with the exception of a small nodule in the isthmus of one of them. It was thought that these men were likely to prove more susceptible to goitrous influences than men who had not previously suffered from the disease. The other four men were in all respects normal. A swelling of the thyroid gland made its appearance in both of the men who had formerly suffered from goitre. In one case it appeared on the thirteenth, in the other on the fifteenth day of the experiment. The swellings fluctuated considerably from time to time, reached their point of maximum size about the thirtieth day, and then retreated to a point of enlargement at which they remained stationary. In two other cases an increased pulsation in the vessels of the neck may have been the evidence of an increased functional activity of the gland, but no appreciable swelling of the organ took place during the 53 days the experiment lasted.

In October of 1907 I submitted myself to the same experiment. My house was situated in the Barmis village and my drinking water was the innocuous water of the Barmis spring. Photographs indicate the change which was observed in my thyroid gland as a result of the experiment, which lasted one month. The circumference of my neck increased by 2½ cm. I first noticed the swelling on the fifteenth day of the experiment. The enlargement fluctuated from time to time, as is observed to be the case in all commencing goitres.

In the spring of 1908 the experiment was repeated in the case of six other young men in whom the thyroid was perfectly normal. In two cases an appreciable swelling of

the thyroid gland occurred which gave rise to an increase in the circumference of the neck in both cases of 1½ cm. In a third case the man was conscious of a sense of "fullness of the throat" at times; there was an increase of 1 cm. in the circumference of the neck, and throbbing of the vessels was from time to time observed. The other three cases showed no appreciable change during the 30 days the experiment lasted.

Coincident with this experiment six other young men living under precisely similar conditions were given, for a period of 30 days, the *boiled* suspended matter which had been separated by filtration from the muddied Kashrote water. It was subjected to boiling for ten minutes. Neither by manual examination, measurement, nor photography could an increase in size of the thyroid be detected in any of the six individuals.

Similar experiments were carried out in the autumn of 1907, with the exception that the residue in this case was not separated from the water by filtration, but the water was allowed to sediment and the deposit administered as indicated. Of 13 young men so treated, 2 developed slight enlargements of the gland which disappeared spontaneously, while in 2 others a more pronounced swelling was observed which was permanent.

Simultaneously with this experiment 13 other young men were given the Kashrote water sediment which had previously been *boiled* for ten minutes. It was administered at the same time and in the same doses. In none of these men could any reaction on the part of the thyroid gland be detected. The experiments lasted for 30 days.

In the spring of 1910 large quantities of the residue, separated from the muddied water of Kashrote by means of a Berkefeld house filter, were administered night and morning to 10 young men of the average age of 22. Of these, 4 showed no reaction whatever on the part of the thyroid gland during the 55 days the experiment lasted. One developed a slight enteritis on the fifteenth day, when the experiment in his case was discontinued. Well-marked changes were observed in the remaining 5 cases. In one of these, in addition to the complaints of tightness of the shirt collar and throbbing in the neck, the measurement of the neck increased by 1½ cm. The swelling was first noticed on the sixteenth day of the experiment, and the right lobe was more prominent than the left. The degree of enlargement can be well seen from photographs.

In a second case the reaction was more marked and resulted in an increased measurement of the neck of 2½ cm. The photographs of the case are especially good. (Figs. 6 and 7.) In a third case the swelling was more marked in the isthmus, which was felt as a rounded boss under the finger; it partially disappeared behind the sternum when the trachea was at rest. In a fourth case the circumference of the neck increased by 1½ cm., and in a fifth by 1 cm. In the first four cases the swelling persisted, in the fifth case it disappeared spontaneously, and while the patient was still drinking the residue.

Concurrently with this experiment 10 other individuals were given the same quantities of Kashrote water residue which had previously been *boiled*. Five of these men were selected as having small enlargements of the thyroid. The duration of the experiment in this case also was 55 days. In no case could the slightest increase in size of the thyroid gland be detected by any method of examination. In the five men who were the subjects of small goitres the original and final measurements of the neck were as follows:—

	cm.		cm.		cm.		cm.
(1)	34	.....	37½	(4)	35	.....	34½
(2)	34	.....	33	(5)	33½	.....	33
(3)	32	.....	30½				

These results show that the tendency to alteration in size of the thyroid was in the direction of diminution and not of increase.

All the cases of artificially produced goitre were rapidly cured by the administration of thymol.

The combined results of these experiments may be summarised as follows: 1. Of 36 individuals who consumed the untreated suspended matter of a notoriously goitre-producing water, 21 exhibited no change in the thyroid gland which could be detected clinically, 10 developed a notable enlargement, while 5 showed a swelling of the organ of a transitory character. 2. Of 31 individuals who consumed the same suspended matter, which had been previously boiled, none showed any reaction in the direction of increase in size of the thyroid.

In order to determine the effect of the administration of *filtered* water to selected individuals under the conditions of the experiments above quoted, I gave 7 men the filtered Kashrote water at the same time that 10 others were consuming the suspended matter separated from it by the Berkefeld filter. In 4 of these individuals the thyroid gland was perfectly normal on the date the experiment commenced; the other 3 were subjects of incipient goitres. All 7 drank only the filtered Kashrote water for 55 days. At the end of this time and during the course of the experiment, not only had no increase in size of the thyroid taken place in any of the individuals, but the existing goitres of the 3 men showed a considerable reduction in size. It is to be remembered that the suspended matter removed from the water by filtration had produced a thyroid swelling in 5 out of 10 individuals who consumed it while the subjects of the present experiment were consuming the filtered water.

With the exception of the experiment with filtered water—which, owing to the small number of men employed, I do not regard as wholly conclusive—these observations have been repeated sufficiently often, and the results have been so constant in character that I feel justified in drawing the following conclusions:—

1. Thyroid enlargement can be experimentally produced in man within a few weeks by the administration of the suspended matter separated by filtration from goitre-producing waters.

2. Thyroid enlargement cannot be so produced when the suspended matter is boiled.

3. The goitre produced in this way must almost certainly be due, not to the mineral, but to the living component of the suspended matter.

4. While it cannot be said to be definitely proved by these experiments that filtration through a Berkefeld filter wholly deprives the water of its goitre-producing properties, water so treated does not appear to be capable of causing goitre in man within a period of 55 days.

The results of these experiments and the observations I have already quoted indicate that *the living excitant of goitre exists in greatest abundance in the deposit at the bottom and sides of water-channels, tanks, wells, and other receptacles of goitre-producing water.*

BIRCHER'S EXPERIMENTS.

I propose next to consider E. Bircher's experiments on rats. His results, published in various papers since 1909 up to the present time, may be summarised as follows:—

1. Goitre can readily be produced in rats by the natural water of goitre-producing springs.

2. The thyroid enlargement does not arise till after several months' subjection to the toxic substances contained in the water.

3. These toxic substances are destroyed by heat (boiling).

4. They are not removed from the water by filtration through a Berkefeld filter.

5. By centrifugalisation it is possible to render goitre-producing water innocuous.

6. The addition of certain chemical substances, such as hydrogen peroxide, to the water renders it harmless. (Marine and Lenhart have shown that the addition of small amounts of iodine, in the form of Lugol's solution, to the water causes a rapid disappearance of the thyroid hyperplasias of trout.)

7. Dialysis removes the goitre-producing substances from the water.

8. Substances separated from the water by the membrane of the dialyser are capable of producing the disease.

In his earlier papers Bircher has stated that the residue left on the candle of the Berkefeld filter after filtration does not cause goitre, but in his later papers (1911) he corrects this statement, and points out that while consumption of this residue for a period of nine months fails to produce any intense goitrous degeneration of the thyroid, goitres are produced after 12, 15, 18, and 20 months' consumption of this residue.

The photograph which I now show, and with which Dr. Bircher has been kind enough to provide me, illustrates these various methods of producing goitre in rats (Fig. 8).

Bircher's latest conclusions, as a result of his experimental work, appear to be that the water of goitrous localities

derives from certain soils an organism which imparts to it a toxic substance of a colloid nature, and it is this substance that excites the thyroid enlargement. He further believes that this organism is itself responsible for the production of cretinism, while the colloidal poison alone causes goitre. He bases this somewhat complicated conclusion on the fact that he and Wilms have produced goitre by means of filtered water. But, since the disease can also be produced by the residue on the candle and by the residue on the membrane of the dialyser, it appears to me to be simpler to conclude that the organism itself passed through the pores of the Berkefeld filter in their experiments.

It is well known that the passage of a water through a Berkefeld candle does not render the water sterile, and that the smaller bacteria (Schmidt) and ultra-microscopic organisms can find their way through it. This is particularly likely to occur when a filter is in constant use unless the candle is cleansed with care, and frequently boiled and renewed. Indeed, unless this is done it may become a source rather than a preventive of infection. Dr. Bircher has told me that a much longer period is required in which to produce goitre in rats by means of filtered water, a fact which appears to me to indicate that this method of filtration removes only a part of the goitre-producing substance. My experiments have shown that while the candle of a Berkefeld filter removed from the water a substance which caused goitre in 50 per cent. of men within a period of 55 days, the same water cleansed by this method of filtration failed to produce the disease in a limited number of men during the same period. It is possible, of course, that an organism living in water may impart to it toxic products, which, being in solution, will readily permeate the filter, but whether or not this is the case the organism which gives rise to such products must be regarded as the essential cause of the malady. Bircher's water is, in my opinion, inadequately filtered, and I must confess that for my own part until it has been demonstrated in man that adequate filtration fails to render a goitrigenous water innocuous I shall be unable to accept in their entirety the deductions of Bircher.

Bircher had produced goitre in rats only after the animals had been subjected for several months to the action of the excitant of the disease, while in men a reaction has been observed by me as early as the thirteenth to the fifteenth day. Now it is known that under natural conditions the disease can make its appearance in a much shorter time than several months—in a period, in fact, which corresponds closely with my findings in the case of the experimentally produced goitre of man. But this apparent difference is to be accounted for by the fact that the minute size of the lobes of a rat's thyroid would make the recognition of the earliest stages of the enlargement a matter of extreme difficulty. Indeed, unless animals were killed every day from the thirteenth day of the experiment onwards, it would be impossible to detect the beginning of the swelling. In man, on the other hand, the larger size of the gland, and the ease with which its changes in size can be appreciated by measurement and photography, make easy the recognition of the earliest signs of enlargement. Bircher was able, in the case of rats, to carry his experiments to a point which is not legitimately possible in the case of man. His goitres in rats are, therefore, relatively as large as those which are found in man after exposure to goitrous influences for a period of 12 months or longer. His results differ from mine only in this respect, that I have noted the earliest stages of the disease in man, while he was able to prolong the experiments sufficiently to give rise to voluminous goitres.

Bircher found, when experimenting with the residue removed from the water by filtration through a Berkefeld filter, that he was able only to use a very few animals owing to the difficulty of procuring from the candle sufficient residue. In the case of my experiments in man I overcame this difficulty by making the water muddy at the time it was drawn, thereby obtaining a residue which contained the excitant of the disease in large amount. Considering the small amount of residue used by Bircher, the results produced thereby (Fig. 8) are very marked.

I consider, therefore, that Bircher's results in rats substantiate my previous findings in man, and that *the presence in suspension in goitre-producing waters of a living agent, which is the direct or indirect cause of the disease, has been demonstrated;* and with this conclusion Dr. Bircher has expressed to me his agreement.

The following are the characteristics exhibited by experimentally produced goitre in men.

(1) It usually appears about the fifteenth day of the experiment.

(2) It shows a marked tendency to fluctuate in size.

(3) It reaches its point of maximum size between the twenty-fifth and thirtieth day of the experiment.

(4) The enlargement of the gland is not great, nor is it progressive under the conditions of the experiment.

(5) It is accompanied, as a rule, with certain subjective symptoms of throbbing in the neck and feelings of fulness and discomfort.

(6) It may completely disappear under the conditions of the experiment.

SOIL A VEHICLE OF INFECTION.

Having, then, thus determined the toxic agent of goitre to be a living excitant, there remains the problem of the relationship of the disease to the soil.

The following are the facts which it is necessary to coördinate and explain:—

Firstly: The greater prevalence of the disease among the poorer, and especially the labouring classes, whose habits of life render them more susceptible to infections that lurk in the soil.

Secondly: It is a well-known fact that the inhabitants of country districts whose habits of life bring them into contact with the soil show a much larger percentage of victims than inhabitants of towns.

Thirdly: The extraordinary history of the disappearance and recrudescence of the disease in Martigny (Valais) requires some explanation other than the water-borne theory. The facts of this case as quoted by St. Lager are: "In the year 1818, owing to a great flood, the soil of the valley, which was moist and marshy, was suddenly covered by plant earth, to a depth of one metre, which had been carried from the mountains." As a result of this renewal of the soil, goitre and cretinism progressively diminished. Later these diseases again increased, due, it is stated, to the introduction of a new water-supply. It is not unlikely, however, that reinfection of the soil was largely responsible for its recrudescence.

Fifthly: There are the instances quoted by St. Lager and others to the effect that the drinking of water rendered innocuous by boiling or distillation is not in itself sufficient invariably to secure immunity in the case of persons resident in goitrous localities. We have also the authority of New Zealand physicians for stating that goitre prevails in parts of the North Island, where the only water used by the people of the district is that of the boiling springs.

Sixthly: I have the evidence of certain experiments which I am about to detail to show that mere boiling or filtering the water is not sufficient to prevent or cure the disease so long as the possible avenues of infection from the soil are not excluded. These experiments were conducted in 1904 and 1905. I assumed that if water were the only source of the disease, boiling and filtering ought to place sufferers in as favourable a position for cure as removal from the district, inasmuch as boiling is definitely known to render the water innocuous. Consequently, I selected a number of goitrous and non-goitrous individuals, to whom boiled and filtered water was administered for a period of two months. A second batch of goitrous and non-goitrous individuals was selected as controls, and these were allowed to drink the untreated water of the district. No restrictions were placed upon the men whose habits of life exposed them to continued infection from the soil. This experiment was carried out in one of the most goitrous villages in Chitral, and I am satisfied that the men drank only the boiled and filtered water provided for their use. It was repeated in Gilgit. I found as a result that neither boiling nor filtering the water sufficed to protect from the disease, nor did pre-existing goitres cease to increase in size.

The cumulative evidence of these experiments, together with the other facts and observations which have been dealt with in this section, affords, to my mind, conclusive proof of the proposition which I now lay down, that *soil is also a vehicle of the contagium vivum of goitre.*

Briefly, to recapitulate, we have now decided that the toxic agent of goitre is a *contagium vivum* conveyed by certain waters and contained in certain soils. I propose

next to examine the peculiarities of the soil which favour its prevalence.

We have already remarked that limestone and lime-bearing rocks are those most commonly associated with the disease. Now these rocks are among the most porous as well as the most widely distributed of all geological formations. If, therefore, my deductions as to the nature of the disease are correct, these widespread and porous rocks would naturally provide its most normal habitat. The suitability of the soil does not depend upon its chemical composition, but rather upon its organic constituents. Kocher has drawn attention to the fact that in the neighbourhood of Bern, where goitre occurs, there is usually an abundance of organic matter in the rocks. The opinion of E. Bircher, expressed in 1908, that the nutrient materials necessary for the life of the excitant of goitre are derived from the remains of the extinct flora and fauna of marine deposits, though it points in the same direction, is one that is based on the slenderest of grounds. I believe that the presence in the soil of animal or vegetable matter, whether its deposition be remote or recent, may convert any soil, no matter what its geological origin, into a suitable habitat for the *contagium vivum* of the disease. A manure heap or a cesspit, for example, is much more likely to afford the necessary nutriment than the remains of the extinct flora and fauna, and is, indeed, a common source of such nutriment.

I am confirmed in this view by studies I have made of the topography of a large number of goitrous villages in Gilgit and Chitral, where I have observed that the presence or absence of goitre in a given village is largely a matter of the ease or difficulty with which the drinking water can become polluted.

I do not suggest for a moment that pollution *per se* is the essential cause of goitre, but I do suggest that pollution provides the nutrient material which admits of the life of the *contagium vivum* of the malady, not only in the soil, but in the water associated with it. On the other hand, a pure water is in itself antagonistic to the life of the living excitant, for we know that the addition of such a water to a goitre-producing one diminishes proportionally its harmful properties, while waters of known purity are frequently used as curative agents by sufferers from goitre.

It may be argued that if my contentions are correct all polluted waters should be a source of goitre. But this is no more a necessary sequence than that all polluted waters should cause typhoid fever. Indeed, the analogy between the spread of goitre and of typhoid fever is not inapt, so far as water as a vehicle for both these maladies is concerned. For the conditions which favour the life of the typhoid bacillus in water will favour also the life of the *contagium vivum* of goitre, and those precautions which have resulted in a great decrease of water-borne diseases, such as typhoid fever, have resulted also in a decrease of goitre. One not infrequently meets with reports in which enteric fever and goitre are bracketed together as having diminished in prevalence as a consequence of adequate protection of water-supplies. But just as a polluted water will not cause typhoid fever unless it contains the bacillus typhosus, so a polluted water will not cause goitre unless it contains the living excitant to which this disease is due. And as typhoid fever can be spread by agencies other than water—agencies which even two or three years ago were wholly unsuspected—so *we must recognise the probability of other sources of infection in goitre and not seek to explain every case by a slavish adherence to the "water theory" only.*

HOW ANY WATER BECOMES GOITRIGENOUS.

It is now easy to provide an explanation of the fact that a water which does not cause goitre in one place may become goitre-producing, or that a goitre-producing water may lose wholly or partially its noxious property. Since water picks up the causal agent of the disease from the soil it will pick it up only from those soils which contain it. A water which is organically pure may pass over such a soil and become goitrigenous as a result. The beneficial influence of adequate protection of water from the soil is exemplified by those many instances in which the simple canalisation of the supposed goitre-producing water has been followed by the disappearance of the endemic.

A water which has become goitrigenous may lose this property as a result of dilution with a purer water (examples of which I have brought to your notice) or by nature's usual methods of purifying water—the action of air and sunlight and by subsidence. The importance of the purifying action of subsidence and the rapidity with which it renders a water comparatively harmless are well illustrated by the case of the artificially bred trout. The water in the tanks was goitre-producing, but not the water which flowed into the first or escaped from the last tank.

A water may be conveyed in pipes for long distances and produce the disease among the consumers at a distance, provided it is goitre-producing at its source. Flowing rapidly through pipes, it is not subjected to these purifying influences to the same extent. Thus the water-supplies of towns which are derived from goitrous districts may give rise to the disease in the towns so supplied.

What, then, are the ideal conditions for the development of goitre? They are to be found in a country district with an agricultural population living on a porous soil, which soil contains much organic matter and by virtue of its porosity or slope admits of the ready passage of organic matter into the unprotected streams and wells that are the water-supply of the people. It is in mountainous countries where limestone rocks abound that these conditions are most frequently found in combination. Consequently, goitre is pre-eminently a disease of the hills, and its relationship to the soil is clear.

THE TREATMENT OF MENINGITIS OF OTITIC ORIGIN.[1]

BY WILLIAM MILLIGAN, M.D.,

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OF the various intracranial complications consecutive to disease of the ear there is no one which is at times more difficult to diagnose and up to the present more disappointing in its treatment than meningitis. Despite all that has been written, there is still considerable diversity of opinion as to what actually constitutes the condition, and perhaps even greater want of unanimity as to the exact relationship between lepto-meningitis serosa, so-called, and lepto-meningitis purulenta. While many observers look upon the former as the forerunner of the latter, others consider the two diseases as distinct entities, while there are still others who deny the existence of any such disease as serous meningitis (Körner, Luc).

That a type of otitic meningeal inflammation exists to which the name meningitis serosa may be fairly applied I have personally no doubt, and that it is the forerunner of all cases of purulent meningitis is a point I hope to make in the following argument. Clinically its presence is indicated by such symptoms as headache, vomiting, stiffness of the muscles of the neck, and increase of arterial tension. Upon tapping the lumbar theca the cerebro-spinal fluid spurts out under pressure. This is as a rule clear, although it may be slightly turbid, and it has a specific gravity of 1005–1008 and an alkaline reaction. It may contain a few lymphocytes and polymorphonuclear leucocytes. In the midst of such conflicting ideas it is unusually difficult to extract light from darkness, and I shall, I trust, be pardoned if in the following remarks I may appear to be didactic and to draw too much from my own, and therefore necessarily limited, experience. The subject is one, however, which has interested me very considerably, and with the surgical treatment of which I have had some little practical experience.

Considered from a pathological standpoint it is undoubtedly convenient to divide meningitis into such subdivisions as serous, plastic, fibrinous, and purulent; but from the therapeutic point of view these subdivisions are arbitrary and are merely so many phases in the evolution of a disease—a progressive disease—the outcome of bacterial invasion, whose invariable termination unless nipped in the bud is in the death of the patient. I would urge the importance of this view, and of recognising that there will always be inherent differences in the clinical landscape due to the variety and toxicity of the causal organism or organisms

[1] A paper read before the Otological Section of the Royal Society of Medicine on Jan. 17th, 1913.

and the cell resistance of the individual. That the disease is not necessarily fatal, provided that an early diagnosis is made and prompt treatment instituted, is evident from the published records of carefully observed and authentic cases. The old adage that delay is dangerous is nowhere more applicable than in the treatment of otitic meningitis. Put briefly, successful treatment depends upon early diagnosis and early drainage. Special knowledge is required in order to make an early diagnosis, and courage to operate in the absence of the full *ensemble* of text-book symptoms.

What actually determines the onset of an attack of meningitis remains as yet undetermined. Why in meningitis is there an increase, and often a very rapid increase, in the amount of cerebro-spinal fluid? Why does not this increased exudate pass into the circulation, there to be dealt with? These and other such problems demand our most careful consideration. The mortality from purulent otitic meningitis is still so alarmingly high that any suggestions as to its treatment will be welcomed by all who have the progress of aural surgery at heart.

For practical purposes meningitis may be divided into two main types, (1) localised and (2) diffuse, and into subdivisions according as it attacks the external surface of the dura or the intradural spaces.

The treatment of that localised form known as extradural abscess is so well understood that I do not propose to discuss it beyond remarking that in my experience it is a more common complication of acute than of chronic otitis media, and more frequently found in the posterior than in the middle fossa, and also that I have frequently encountered such extradural collections of pus when their existence was quite unsuspected. It is quite a different matter, however, when ulceration of the dura has taken place and infective organisms have reached the intradural spaces. It is true that localised collections of pus are found in the intradural space, but the tendency here is towards generalised suppuration, as the defences thrown out by nature are rarely strong enough to resist repeated bacterial attacks. Such localised intradural collections of pus are rarely diagnosed, but are occasionally found in the course of exploratory operations.

Purulent lepto-meningitis, by which I mean an involvement of the meshes of the pia-arachnoid membrane, is by far the most formidable of the various intracranial complications secondary to purulent otitis media, and is frequently encountered with brain abscess or sinus phlebitis. For a time the infective process remains localised to the neighbourhood of the original focus of septic disease, but tends to become diffuse and generalised. The fact, however, that it remains for a time at any rate localised deserves to be more appreciated, for it is at this stage that operative interference is most likely to prove successful. Exacerbations of temperature denote to my mind invasion of fresh areas of tissue, and, therefore, of an advance of the disease, and are consequently important signals. It is useless to await the advent of all the classical signs and symptoms so ably portrayed in the majority of text-books, By the time they are in evidence the patient is, as a rule, beyond the hope of surgical intervention, the increased intracranial pressure and the existing toxæmia so disorganising his cerebral cortex as to make recovery well-nigh impossible. An intelligent appreciation of the course of pathological events, and an analysis of the cerebro-spinal fluid—the keystone to the situation—materially assist in making an early diagnosis and in instituting a rational line of treatment.

Under normal circumstances the mechanism controlling the secretion of cerebro-spinal fluid and its ultimate passage into the venous system is so delicately poised as to ensure an equable pressure. Let this mechanism be disturbed ever so slightly by factors which tend either to cause an increased exudation or to prevent the passage of fluid through the Pacchionian bodies and we have at once certain changes induced, changes which are capable of being accurately registered by modern chemical tests. Under normal circumstances the cerebro-spinal fluid is under slight pressure—20–30 mm. of mercury—has an alkaline reaction and a specific gravity of from 1005 to 1008. It may be secreted in great amount as the result of some peripheral focus of irritation, with as a consequence the various signs and symptoms of increased intracranial tension; but so long as it is able to deal with and to annihilate any bacterial attack it remains alkaline and more or less clear. Increased turbidity, however, does not mean that it has become septic, but that there has been a marked leucocytosis—in other words, a supreme effort to ward off invasion. Diminishing alkalinity denotes to my mind progressive bacterial invasion, while an acid reaction indicates that definite purulency has become established. My opinion is that all cases of purulent meningitis are preceded by a stage of serous meningitis, when a desperate fight is made by the meninges and cerebro-spinal fluid to resist bacterial invasion. To attain victory cerebro-spinal fluid has to be secreted in such quantity that the patient may become almost comatose from increased intracranial tension. If, however, operative interference be undertaken at this stage and the focus of infection removed with, at the same time, a fair amount of cerebro-spinal fluid, recovery not uncommonly follows. That the fight may be a long and desperate one is evidenced by the case of a female, aged 36, who for five weeks struggled against bacterial invasion of her cerebro-spinal fluid, and finally succumbed to a streptococcal infection. At the time of her admission to hospital she was suffering from suppurative labyrinthitis and symptoms of increased intracranial tension. Examination of the cerebro-spinal fluid, which was turbid, showed a marked leucocytosis, but no bacteria were found either in films or cultures. The fluid was under high tension, contained an increased amount of albumin, and reduced Fehling's solution normally. A complete labyrinthectomy was performed and a small extradural abscess at the apex of the pars petrosa opened. Later, on account of the persistence of increased intracranial tension, translabyrinthine drainage was instituted. The cerebro-spinal fluid which was examined from time to time remained turbid and alkaline until two days before the patient's death, when it suddenly became purulent and was found to swarm with streptococci and staphylococci. (Fig. 1.

FIG. 1.

Suppurative labyrinthitis; suppurative meningitis. Film shows streptococci and disintegrated cellular elements.

Transition from the serous to the purulent type of cerebro-spinal fluid is not necessarily, however, indicated by the presence of bacteria. It may and does take place before any bacteria are discovered in films or cultures, as what we have to deal with is the inter-reaction between the toxic by-products of bacterial life and the living tissues. It is consequently to the chemistry of living tissues such as the cerebro-spinal fluid that we have to look to for the earliest indications of pyogenic invasion. Careful analysis will reveal delicate pathological changes at a time considerably anterior to that at which the more gross clinical symptoms manifest themselves. Metabolism of the products of bacterial life is such as to destroy, or partially destroy, the existing carbohydrates or proteins in the cerebro-spinal fluid. It is now admitted that in normal cerebro-spinal fluid there is a carbohydrate—a glucose—which has the power of reducing the copper in Fehling's solution. In the presence, however, of bacterial infection of the cerebro-spinal fluid the existing carbohydrates become rapidly used up, with the result that in purulent meningitis there is an absence of this copper reduction. Hence we have at once an easy and apparently

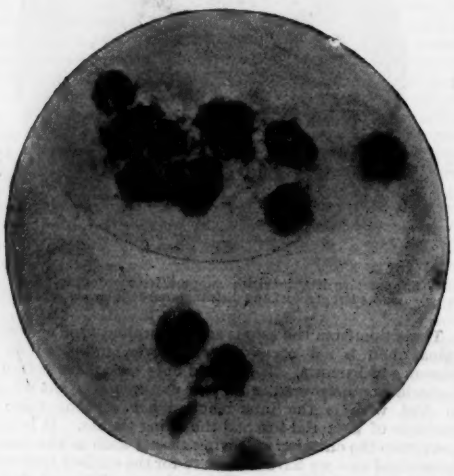
a certain test (Kopetzky)[2] of determining when and whether a serous meningitis is becoming purulent or not. In addition the percentage of solids is increased, more especially the percentage of albumin. On boiling normal fluid a faint haze from the coagulation of albumin is noted. In purulent meningitis the amount increases at times to as much as 0·1 per cent.

A progressive and at the same time diminishing alkalinity of the cerebro-spinal fluid, or a definite acidity, provides another useful bedside test of what is taking place. Several observers—among others Araki[3] and Zillensen—have shown that in the presence of a lack of oxygenation there is a production of lactic acid in the living tissue. Where metabolism is upset as the result of some inflammatory, and more especially septic process—where, in other words, production is in excess of elimination—a varying amount of acidosis is induced, and it is to this artificial acidosis that the acid reaction of the cerebro-spinal fluid is due. So long as the cerebro-spinal fluid remains alkaline, even though turbid, there is reason to expect a good result from operative interference, but should it become excessively turbid and acid the prognosis is grave, as then we know that the cell resistance of the individual has been overcome, and that bacteria and their toxins have gained the upper hand.

FIG. 2.

Sarcoma of mastoid; suppurative meningitis. Film shows streptococci and disintegrated cells.

FIG. 3.



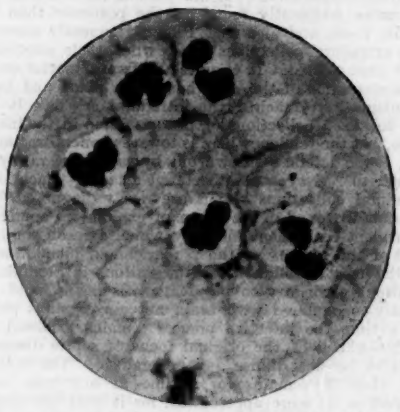
Temporo-sphenoidal abscess; suppurative meningitis. Film shows leucocytosis.

In the early stages of meningitis the cellular elements found in the cerebro-spinal fluid are very much the same as those found in the normal fluid. Occasionally a few lymphocytes in various stages of disintegration and a few polymorphonuclears are to be seen. Later on, when the fluid has become definitely purulent, there is an enormous increase in the number of leucocytes, chiefly polymorphonuclears, and a moderate increase in the number of lymphocytes.

Bacteria are not found in films or in cultures in the early stages of the disease. As the disease progresses they are, as a rule, easily detected, either intra- or extra-cellular. The commonest varieties found are streptococcus, staphylococcus, a Gram-staining diplococcus, and Friedländer's bacillus. (Figs. 2, 3, and 4.)

Coincident with these delicate changes in the cerebro-spinal fluid certain clinical signs and symptoms of diagnostic value make their appearance. Thus the gradual increase of intracranial pressure from excessive and protective secretion of cerebro-spinal fluid is accompanied by a simultaneous increase of general blood pressure and progressive tendency to cerebral anæmia. Owing to the brain substance itself being incompressible the pressure is exerted upon its vascular supply, with the result that nutrition is gradually cut off and a condition of malnutrition started. To this progressive increase of intracranial tension too much importance cannot be attached. It is in many cases the determining factor in the fatal issue, the cerebral anæmia which it induces paralysing the function of one or other of the sensitive vital nerve-centres. It is at this stage, the stage of active resistance by the cerebro-spinal fluid to the invasion of bacteria, when the fluid, although possibly turbid, is still alkaline and capable of reducing the copper in Fehling's solution, that lumbar puncture as a therapeutic measure is so advantageous. The withdrawal of a quantity of fluid, the amount varying with the pressure under which it escapes through the trocar, by relieving the mechanical symptoms due to increased pressure, tends to ward off profound cerebral anæmia and so to give time for the institution of more definite remedial measures.

FIG. 4.



Suppurative labyrinthitis; suppurative meningitis. Film shows leucocytosis, no bacteria.

Another indication of commencing meningitis is found in the presence of an œdema of the optic disc. The sheath of the optic nerve being a continuation forward of the membranes of the brain and containing cerebro-spinal fluid, anything which tends to increase the amount of cerebro-spinal fluid, and consequently intracranial pressure, will at the same time increase the pressure around the nerve, an increase reflected by a certain fluffiness of the margins of the disc.

I have also found in a few cases a lowering of the upper tone limit due to what I take to be similar mechanical causes. Owing to the fact, however, that the labyrinth upon the affected side is so frequently implicated in the primary septic process the test has in such cases to be applied to the labyrinth of the opposite ear.

The various chemical tests and the signs and symptoms just detailed are evidence of a *primâ facie* case of incipient meningitis and afford sufficient evidence to convict and to

[2] Transactions of the American Laryngological and Otological Society, May, 1912.

[3] Zeitschrift für Physiologische Chemie, xv., 1891.

banish the invading party. To be effective, punishment should be drastic and rapidly carried out.

In the early stages of meningitis, when the cerebro-spinal fluid is under high tension, clear or faintly opalescent, alkaline in reaction, and on boiling capable of reducing the carbohydrates present, repeated or continuous drainage through the lumbar theca, in addition to the removal of the primary focus of infection, by so diminishing intracranial tension and consequent cerebral pressure may bring about a complete cure. Ventricular drainage, although it may find a place in the treatment of non-pyogenic meningitis, entails the risk of infecting a previously non-infected ventricle as well as the cerebral substance through which the knife or needle has to pass. Lumbar puncture is to my mind, however, much more a diagnostic than a therapeutic measure, and although in mild cases it may succeed in bringing about a cure is not to be relied upon. Even continuous lumbar drainage, which *a priori* might have been expected to be efficient, fails after a time, because as fluid is continuously withdrawn the brain stem sinks down into the foramen magnum, with the result that it is prevented flowing from the distended ventricles through the foramen of Majendie and so into the spinal theca. A more effective and more rapid method of drainage is necessary, such as is obtained by translabyrinthine drainage or by one or other form of decompressive operation.

The internal administration of urotropine is said to have a beneficial effect and to assist in keeping the cerebro-spinal fluid aseptic. Its rapid elimination, partly as formaldehyde, and the fact that it is found in the cerebro-spinal fluid soon after its administration by the mouth, have given rise to the idea that it might possess a certain antiseptic value, in addition to which Barton [4] and Brown [5] maintain that it is also found in the secretion from the infected ear.

When in cases of serous meningitis the labyrinth is the primary focus of infection, its complete removal with, in addition, the establishment of translabyrinthine drainage as recommended by West and Scott,[6] may prove efficient. In preference, however, to translabyrinthine drainage, I am in favour of a decompression operation in the posterior fossa at some distance from the original focus of labyrinthine suppuration on account of the risks of infection of the cerebro-spinal fluid unless asepsis be maintained, which under such circumstances is extremely difficult, if not impossible.

Opinions differ very much as to the actual value of serum-therapy and vaccine treatment in cases of purulent meningitis. While not denying that the administration of an autogenous vaccine may help, my experience has been to regard it merely as an adjuvant and to rely upon the relief of intracranial pressure as afforded by one or other form of decompressive operation and the removal of the primary focus of infection.

To be successful, any treatment of otitic purulent meningitis presupposes elimination of the primary focus of infection, whether it be a middle or an internal ear suppuration, or, as is so frequent, of the two combined. It is only of late years that purulent internal ear disease has received anything like adequate attention. In my opinion the internal ear is not only by far the most frequent avenue of infection to the meninges, but is also the most dangerous because it leads to direct infection of the posterior fossa. In actual practice cases of what one might name "tympanic meningitis" are not nearly as fatal as cases of "labyrinthine meningitis." In the former the resulting meningeal infection is likely to be localised, whereas in the latter there is a tendency to rapid diffusion, while from the conformation of parts operative interference is considerably more difficult. The fact that in the posterior fossa there is a larger amount of cerebro-spinal fluid to be infected than in the middle fossa adds to the danger of infection in this region. When therefore infection is by way of the internal ear, as can usually be established by the employment of the caloric or other labyrinthine tests, a complete labyrinthectomy, in addition to a complete post-aural operation, should be performed. Having eliminated the primary focus of infection any pathological tract leading into the interior of the cranium should be followed, and if a localised collection of pus be found, free drainage afforded by removal of as much of the surrounding bone as is deemed necessary.

[4] Journal of the American Medical Association, March 5th, 1910.
[5] Ibid., April 16th, 1910.
[6] The Operations of Aural Surgery, 1909.

Assuming, however, that there is no evidence of any localised collection of pus but that we have to deal with a spreading meningitis the difficulties of treatment are enormously increased. The objects to be borne in mind after removal of the primary focus of infection are (1) the relief of intracranial pressure; (2) the establishment and maintenance of free drainage from the meninges; and (3) the overcoming of the existing toxæmia.

In undoubted cases of purulent meningitis lumbar puncture has no place other than as a means of diagnosis. Some form of decompressive operation is called for, the essential feature of which is to provide by a sufficiently free removal of bone a window large enough to relieve efficiently the existing pressure, and at the same time to provide a means of freely draining the infected meninges. A window having been made either in the temporo-sphenoidal or cerebellar area, the dura will be found to bulge into the opening and practically to cork it up. Some operators content themselves with the making of such a window and with the relief of pressure thus obtained. No doubt, in certain cases of incipient meningitis, meningitis serosa, this is sufficient, but in purulent meningitis it merely delays the fatal issue for a few hours or days.

To drain the pia-arachnoid cavity the dura may be dealt with in several ways: (1) by excising narrow strips in parallel rows; (2) by raising as large a flap as the bone wound permits of; (3) by removing entirely the dura corresponding to the bone wound.

To Charles Ballance [7] we owe the suggestion of attacking meningitis by the occipital route. In 1891 he performed the now classical operation of draining the posterior subarachnoid space after trephining the occipital bone upon both sides of the middle line close to the foramen magnum.

In 1893 Alfred Parkin [8] proposed drainage of the cisterna magna, while in the same year Ord and Waterhouse [9] drained the posterior fossa after removal of a portion of the occipital bone and incision of the underlying membranes.

Since that time isolated cases have been recorded by various observers, some successful, many, however, unsuccessful from the fact that the operation, however skilfully planned and executed, was undertaken at too late a stage, when in fact the patient was almost moribund from excessive intracranial pressure and progressive toxæmia.

Whether decompression be performed over the temporo-sphenoidal or cerebellar area great difficulty is encountered in dealing with the brain substance itself. The moment the dura has been incised the cerebral or cerebellar cortex, as the case may be, is thrust into the wound by the *vis a tergo*, and tends not only to cork up the opening made and so to prevent the escape of infected cerebro-spinal fluid, but also to lacerate its substance against the edges of the bone wound. Efficient drainage of the subarachnoid space is consequently rendered very difficult. The tendency to brain hernia is also encouraged, partly from the *vis a tergo* and partly from the mechanical difficulties of maintaining free drainage. To obviate this tendency to brain herniation Haynes,[10] of New York, has suggested drainage of the cisterna magna through the cerebello-medullary angle, as in this situation there is no brain tissue in the immediate neighbourhood to protrude, and also because infected fluid is prone to collect here. He regards this situation as the *one logical place* where removal of infected cerebro-spinal fluid should be practised. The patient is laid prone upon the operating table, the head being held up by a suitable head-rest or by a competent assistant. An incision is made in the middle line from the occipital protuberance to the spinous process of the axis, the soft parts retracted and the underlying occipital bone removed. A ¾ in. trephine is applied in the middle line about one inch above the margin of the foramen magnum and a disc of bone removed. The dura is then separated from the bone and two grooves made through the bone into the foramen magnum. When this triangular piece of bone has been removed the dura presents under pressure. A small incision is made through the bulging dura and arachnoid with the immediate escape of cerebro-spinal fluid. When a quantity of fluid has drained away the incision is enlarged and an inspection made of the posterior poles of the cerebellum, the

[7] Brit. Med. Jour., January, 1897.
[8] THE LANCET, July 1st, 1893, p. 21.
[9] THE LANCET, March 10th, 1894, p. 597.
[10] Transactions of the American Laryngological and Otological Society, May, 1912.

notch between them, and the posterior surface of the medulla. A drain is then inserted into the cisterna magna and suitable dressings applied. So far I have only performed Haynes's operation twice, and in neither case did the patient survive. Both were advanced cases of purulent streptococcal meningitis with high arterial tension and pus-laden cerebro-spinal fluid; in both cases I believe the operation was undertaken too late. The procedure, however, appeals to me, and at some future date I hope to have success with a case undertaken at a much earlier stage of the disease. The position of the patient upon the operating table rather interferes with the administration of a general anæsthetic; possibly spinal anæsthesia might prove sufficient, but of this I have had so far no experience.

My records show 37 cases of meningitis serosa, so-called, with 29 recoveries and 8 fatal cases. In these 8 cases the cerebro-spinal fluid became definitely purulent, and although one or other form of decompression operation was performed it was unsuccessful.

Of cases diagnosed at the time of admission to hospital or to the surgical home to be suffering from purulent meningitis and submitted to operation I have had 14. In 4 of these cases it probably would have been wiser to attempt no operation; at any rate, all died. Of the remaining 10, where there was at least a sporting chance of recovery, 6 died and 4, or 40 per cent., recovered. This certainly is nothing to boast of, but it is at least a step in the right direction.

In conclusion, I would urge the necessity of an early diagnosis, employing for the purpose such tests as I have detailed, followed by immediate operative interference should such tests prove positive. Although the results of surgical intervention as yet obtained are far from satisfactory, I believe the day is coming when with modern methods of diagnosis and technique at our disposal the high mortality of the past will shade into insignificance beside the brilliant records of the future. It is for a society such as this to lead in the van of progress, not to be deterred by failure, but to press on to attain that great reward—the knowledge that our efforts have been crowned with success, and that an otherwise doomed life has been saved as the result of scientific investigation and surgical skill.

I am indebted to my house surgeon, Dr. Frank Wrigley, for the preparation of the films.

Manchester.

ON A CASE OF ADENOMYOMA UTERI.

BY J. B. HELLIER, M.D. LOND.,
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AND

M. J. STEWART, M.B., CH.B. GLASG., M.R.C.P. LOND.,
CLINICAL PATHOLOGIST TO THE INFIRMARY.

THE specimen figured and described here was removed from a patient, aged 44, who was admitted for retention of urine. She was married at 23, but lost her husband two years later, and was never pregnant. She had always enjoyed good health. Her periods have always been regular, lasting four days, never excessive, though accompanied by some pain, but there has been no increase lately either in the frequency, amount, or painfulness of this function. Her first and only symptom was noticed on Oct. 13th, 1912, when she found that she could not pass urine. On admission a uterine tumour was found occupying the body of the uterus, which was about the size of a four months pregnancy. Supravaginal abdominal hysterectomy was performed on Oct. 19th. The operation was a little difficult because pelvic adhesions prevented the raising of the tumour, and because the tumour filled the pelvis it was far from easy to reach the attachments. Recovery was uncomplicated.

On section the tumour was found to be a typical adenomyoma. The uterine wall is uniformly thickened, and does not show the encapsuled growth or growths so characteristic of ordinary myomata. Hence it would not have been possible to treat this case by myomectomy. The uterine canal, as Fig. 1 shows, runs straight through the tumour without being deflected by any bulging growth; only at one point there is a small fibrous nodule well differentiated. The endometrium is somewhat thickened, and the naked eye perceives many larger or smaller cystic spaces scattered over the surface of the section.

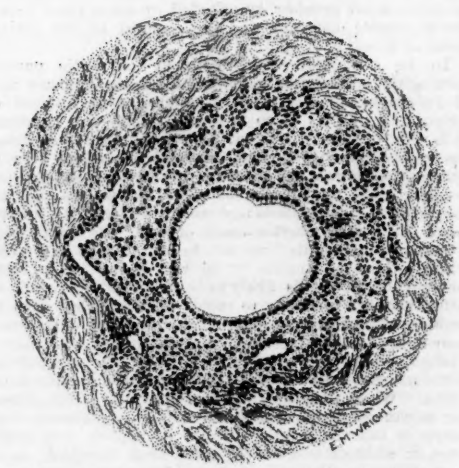
Report on microscopic examination by Dr. Stewart.—Diffusely scattered throughout the myometrium are numerous small cystic spaces of various shapes and sizes. These, on microscopic examination, are found to be lined by a broad zone of loose spindle-celled tissue closely

FIG. 1.

Adenomyoma diffusum cysticum, from a photograph by Professor Hellier. Section of the tumour (macroscopic). Shows the uterine canal running straight through the tumour, diffuse myomatous growth of the uterine wall, especially of the posterior wall, and a small fibrous nodule about the centre; also several of the larger cystic spaces are very obvious. The tumour measures 4½ inches by 3 inches.

resembling endometrial stroma, but innocent of glands. This is lined internally by a single layer of cylindrical and columnar epithelium, which in part appears to be ciliated. In many of the cysts only small tags of epithelium remain. Peripherally there is a fairly sharp line of demarcation between the endometrial lining of the cysts and the myometrium. (Figs. 2 and 3.)

FIG. 2.



Section through one of the smaller cystic spaces. Shows a single lumen with a lining of columnar cells and surrounded by an endometrial-like stroma. The spaces in the latter are vascular and not glandular. Peripherally the unstriped muscle of the uterus is seen.

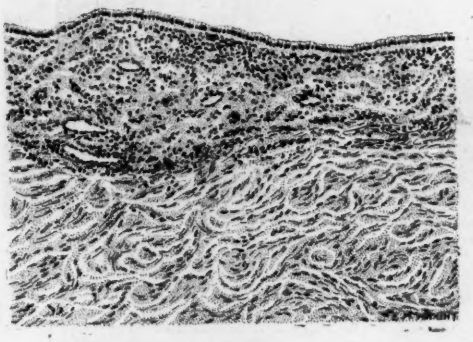
The condition appears to be one of adenomyoma diffusum cysticum, and the marked cystic distension of the endometrial down-growths (accepting Cullen's views on this

point) quite accounts for the absence of actual gland-like acini.

Remarks by Professor Hellier.—Adenomyomata have been recognised as a group separate from ordinary myomata for several years. The first important publication on the subject was by Professor von Recklinghausen in 1896, but we are indebted to a very beautiful monograph by Dr. T. S. Cullen, of the Johns Hopkins University (1908), for the best recent work on the subject. Recklinghausen held that the gland structures are derived from vestigial remains of the Wolffian ducts, but Cullen has shown that the gland spaces can be traced to the uterine cavity, and that they are, in fact, offsets from the main uterine canal and communicate with it. It has been shown that menstrual fluid is excreted in these subsidiary glandular spaces, and that in one case, at least, the decidua of pregnancy has been observed in the glandular spaces.

Hence we have a very interesting conception of the uterus in this and similar cases, if we regard the corpus uteri as

FIG. 3.



A portion of the margin of one of the larger cystic spaces showing similar appearances to those in Fig. 2. (Figs. 2 and 3 are from drawings by Miss E. Wright.)

more or less penetrated in all directions by small diverticula from the central cavity, with an endometrial lining which takes part in the menstrual function and shares in the physiological changes of pregnancy.

Amongst the clinical features common in adenomyoma Cullen mentions pain at the periods and marked menstrual excess, but this case shows that such features are not invariable. It also illustrates the fact, well known to gynæcologists, that retention of urine is often an important symptom in myoma uteri, and should always be thought of when retention occurs apart from pregnancy or other obvious cause. It is also an important indication for operating for the myoma. Some traces of old peritonitis were found in the pelvis, and this seems common in adenomyoma.

It seems possible, in view of the endometrial diverticula found in these cases, that an ovum might become embedded in the uterine wall and so give rise to an ectopic interstitial pregnancy at a point distant from the interstitial part of the oviduct.

Leeds.

DONATIONS AND BEQUESTS.—The late Mrs. Annie Ethel Perrin left for charitable purposes £16,000 divided into 17 parts, of which the Swansea Hospital, the Royal Ear Hospital, London, the Bristol Royal Infirmary, the Bristol General Hospital, the Bristol Dispensary, the Bristol Eye Hospital, the Bristol Hospital for Women, and the Bristol Deaf and Dumb Institution will each receive one part.—By the will of the late Mr. G. S. Guy the testator left £500 each to the Malvern Hospital, the Wolverhampton Royal Orphanage, and the Wednesbury District Nurses' Institution or Nurses' Home.—Mr. Austen Chamberlain has received a sum of £2004 from Messrs. F. and A. Swanzy, Limited, being their collection on behalf of the fund which is being raised for the extension of the London School of Tropical Medicine.—The Grand Duke Michael has sent a cheque for 500 guineas to the Hampstead and North-West London Hospital for the purpose of purchasing a motor ambulance.

HYPERTROPHIC STENOSIS OF THE PYLORUS IN ADULTS.

BY H. GILBERT BARLING, M.B. LOND., F.R.C.S. ENG.,

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I SUPPOSE that most surgeons who have had to deal with cases of hypertrophic pyloric stenosis in the infant have wondered what happens to the muscular overgrowth in the pyloric canal, whether the patients are submitted to operation or recover without. Does the hypertrophy eventually recede or does it remain permanent? May it become exaggerated later in life and produce symptoms, or may it originate in adults? The following cases seem worth recording as a small contribution toward furnishing an answer to these questions,

CASE 1.—In January, 1909, a male aged 27, was admitted under my care in the General Hospital, Birmingham, with symptoms typical of pyloric stenosis—periodic vomiting of large quantities of fluid, evidence of stasis, loss of weight, and severe constipation. The illness began three years before admission with indigestion, which the patient described as pain in his stomach almost as soon as he had taken his food, a feeling of fulness, and much flatulence. These conditions would come on in attacks lasting two or three weeks, and were relieved by medicine. After an attack he would be all right, perhaps for two or three months, and would then have another similar attack. The pain was felt below the left costal margin; it would last from half an hour to an hour, and would gradually go off. When these symptoms had existed two years the patient began to vomit after taking food; at first it was usually after his midday meal, and the vomiting came on almost immediately after the food was taken; the vomited matter appeared to be the food very little altered. After the act of vomiting the patient felt quite comfortab le and well. The intervals between the attacks of vomiting gradually became shorter, until eventually the vomiting occurred after taking even fluids. Blood had never been noticed in the vomit or in the stools.

Operation.—The stomach was comparatively small, but its muscular coats were very hypertrophied. A firm, massive thickening involved the whole of the pyloric canal, and encroached a little on the antrum. The thickening felt like a solid muscular structure such as the body of the uterus; it was nearly three inches long and about an inch and a half thick; the peritoneum over the thickening was perfectly normal; the surface was smooth and without scar or nodulations. On attempting to invaginate the stomach or duodenum into the pyloric channel only the very tip of the little finger was admitted from either side. These conditions were verified by my assistant at the time of the operation, and we agreed that they could not be explained by any spasmodic contraction, nor did they suggest malignant growth or inflammatory formation, but rather an overgrowth of muscular or fibrous tissue. A posterior gastro-jejunostomy by the no-loop method was performed, and an easy recovery followed. I learn from Mr. E. H. Kenderdine, of Coventry, that the patient continues well and in full w ork—that is, nearly four years after the operation.

The conditions found suggested to me that the patient was suffering from a hypertrophic stenosis similar to that which occurs in young infants, and I have deferred recording the case, thinking that time might bring other examples of the same condition.

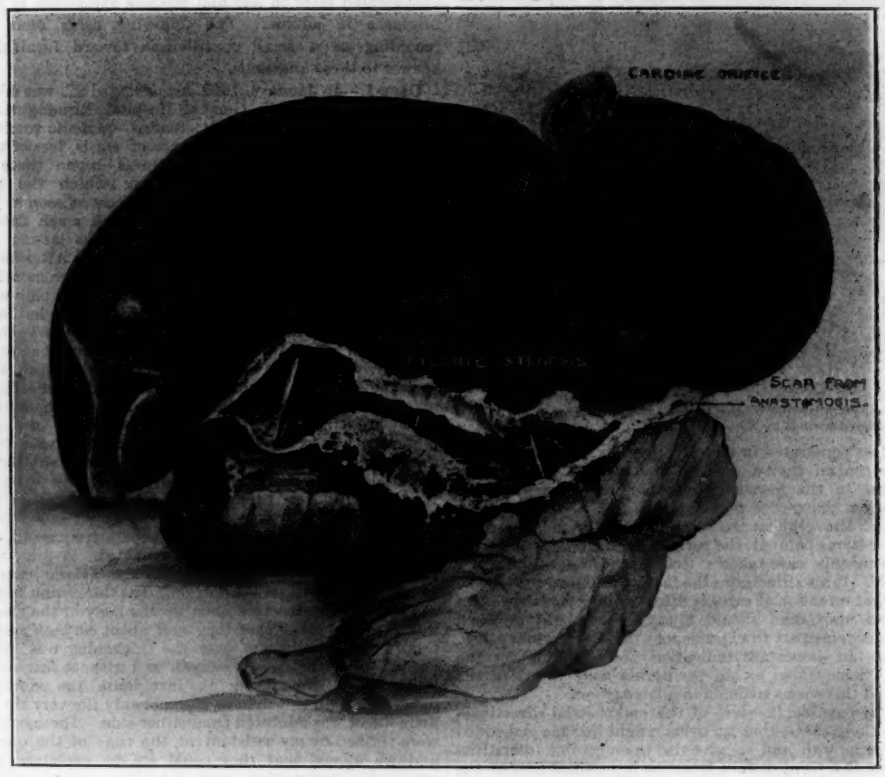
CASE 2.—Early in January, 1912, I was asked by my colleague, Sir Robert M. Simon, to see with him a girl, 17 years of age, who had been admitted into his wards complaining of pain in the upper abdomen and vomiting. Her illness dated from a time six months previous to admission to hospital, when she vomited after eating some fried fish; she was ill for a week, and then was able to return to work. A fortnight later the pain and vomiting after food returned and continued with intermissions until admission to hospital.

When admitted the pain came on from half an hour to an hour after food; the vomiting was frequent and was preceded by retching; blood had never been recognised in the vomited matter.

General state.—The patient was thin and pallid; the cheeks were flushed; the left pupil was larger than the right; the mental state was dull, and she spent much time in sleeping. The abdomen was scaphoid in shape and moved on respiration; tenderness on palpation was not elicited, and no tumour could be recognised; the bowels were very constipated. A test meal showed the presence of unaltered currants and muscle fibre some six hours after the meal was given. The vomited matter was generally very disagreeable in odour, but repeated examination failed to show the presence of blood. A bismuth meal administered for X ray examination was vomited almost immediately. Von Pirquet reaction was negative; the leucocyte count was 10,000. The temperature was irregular; sometimes it ran up to as high as 103° F.; the pulse was irregular and generally quick. The girl was evidently very ill, more so than one would generally expect to find in a case merely of simple stenosis of the pylorus, and both Sir Robert Simon and myself thought, from the character of the vomit and from the patient's general condition, that it was possible she was suffering from a stenosis in the small intestine rather than at the pylorus, and we were suspicious that the condition might be one of tubercular constriction from past ulceration of the bowel.

Operation (Jan. 15th).—The pyloric canal presented a dense thickening sharply limited at both ends and resembling exactly the hypertrophic stenosis of young infants. The peritoneal surface was quite smooth and free from any indication of ulceration; there was no nodulation and no fixation on adjacent parts. The usual operation of posterior gastro-jejunostomy was performed. The operation was well borne, but on Jan. 17th a slight convergent strabismus was noticed, and the patient complained of diplopia. On the 19th she had vertical nystagmus, and on the 24th complained of pain in the right side of the abdomen, and a little blood was noticed in the urine; the blood increased in amount the next day or two. On the 26th optic neuritis was observed, and on that day tubercle bacilli were found in the urine. Vomiting did not occur for the first few days after the operation, but subsequently it happened at rare intervals. The patient died on Jan. 31st apparently from tubercular meningitis. No complete necropsy was allowed, so the stomach only was examined.

For the illustration I am indebted to my dresser, Mr. Oscar Parkes. It shows the first part of the duodenum, the pyloric canal, and the adjacent part of the stomach laid open; the overgrowth of tissue in the pyloric canal and its abrupt limits are well seen. Careful examination of the exposed mucous membrane showed no trace of old or recent ulceration, and microscopic section revealed only an overgrowth of the circular muscular fibres. The thickening of the pyloric canal in the first case was much more marked than in the second, and allowing for the difference in size of the organs compared, it was an exaggeration of the infantile condition.



Sketch of stomach and duodenum, laid open to show hypertrophic stenosis of pylorus.

When operation revealed the cause of the patients' symptoms the near relatives of each patient were carefully questioned as to the history during infancy, but no facts were obtained suggesting the presence of stenosis in the patients' lives at an earlier date than that recorded in the preceding notes.

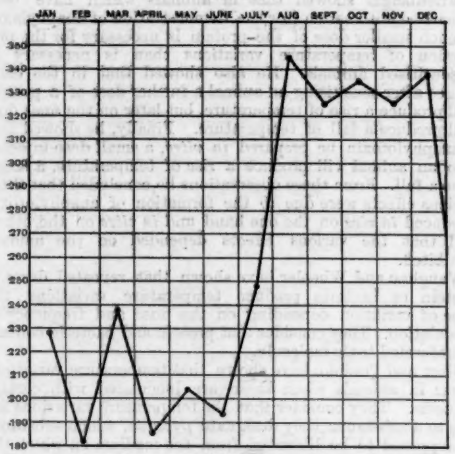
Birmingham.

MALARIA IN INDIA AND THE BIRTH- AND DEATH-RATE.

BY W. H. KENRICK, M.R.C.S. ENG., L.R.C.P. LOND., MAJOR, I.M.S.

DEALING first with the birth-rate, malaria in both its epidemic and endemic forms has a very marked effect. In the case of the epidemic form of the disease this is shown by a great reduction in the total number of births in the year following the epidemic. This reduction begins nine months after the commencement of the epidemic, and reaches its height exactly nine months after the epidemic attains its maximum. This is well shown in the monthly birth curve of the Punjab for the year 1909, following the severe epidemic of the previous year. This characteristic of the curve—viz., a sudden fall spread over three or four months and reaching its maximum in June or July—is due to epidemic malaria alone; it is quite distinct from the variations brought about

FIG. 1.

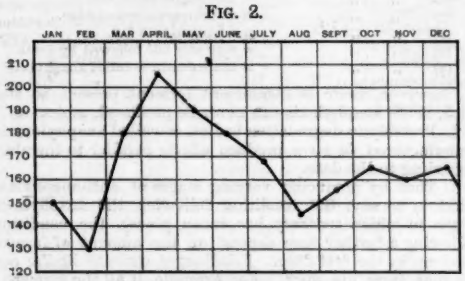


Birth curve of 34 healthy villages, with an average spleen-rate of 4 per cent.

by famine, cholera, plague, &c., and enables the course of an epidemic in a province to be mapped out by a study of the birth statistics only.

Endemic malaria, on the other hand, causes no reduction in the yearly birth-rate of places in which it prevails, compared with the rate of neighbouring healthy areas. It has,

FIG. 2.



Birth curve of 33 hyperendemic villages, with an average spleen-rate of 80 per cent.

however, a marked effect upon the monthly distribution of births. If the average monthly curve of a healthy area for a series of normal years is drawn, it is seen that the births are least in number during the early months of the year and greatest during the autumn months, the highest point of the curve generally being in October or November. The probable reason for this is that since the early part of the year is the most healthy, and at the same time the period of the harvest—in other words, a time when the physical and economic condition of the people is at its best—therefore this is the period most favourable for fertilisation. In a malarious locality, on the contrary, the early months of the year are those in which fever is most prevalent. In such a locality nearly every inhabitant is chronically infected with the parasite, and frequent exposure to the often severe cold of this period readily induces relapses. Thus during the cold weather months there is an increase of malaria, and, as the results of epidemics show, a period of increased fever prevalence is a period of comparative sterility. The rise in the birth curve, which normally should occur in the autumn, is thus postponed for five or six months, and takes place during March, April, or May instead. This is well shown in the diagrams (Figs. 1 and 2), which give the birth curves of two groups of villages, in each of which the amount of malaria actually present was determined by measurement. The birth curves of several "thana" (police registration) areas, in a part of the Central Provinces of India well known to be intensely (and endemically) malarious, are given; also, by way of comparison, those of healthy registration areas in the same district. (Figs. 3 and 4.) These areas are the statistical administrative units, and the registered births for a consecutive series of years (1901–09) are taken. The healthy and malarious tracts alike are inhabited by the same class of people, living under practically similar social, economic, and climatic conditions. The only difference between them is in physiographical features, which in the endemic areas are such (ravines, forests, rank grass, &c.) as are usually found in association with intense malaria. The marked divergence, therefore, of the two types of birth curves can only be attributed to the effects of this chronic disease.

With regard to the death-rate, it is known that malaria tends to increase this in places in which it is endemic; but owing to the fact that such places (in the tropics) are usually remote, their inhabitants backward and apathetic, and their vital statistics, so far as *causes* of death are concerned, unreliable, the proportion of the total mortality attributable to this disease cannot, as a rule, be ascertained. In certain cases, however, detailed measurements have been made to ascertain the malarial mortality. Rogers found that 25 per cent. of the total fever mortality in a highly malarious district of Bengal might be ascribed to malaria, and Ross estimates the true malarial death-rate of Mauritius to average about 20 per 1000 per annum. In parts of the Central Provinces of India endemic malaria is extremely prevalent, an average spleen-rate of between 80 and 90 per cent., with a high degree of enlargement, being common among the inhabitants of such places. If the vital statistics of such endemic areas during a period free from cholera, plague, and famine are closely compared with those of neighbouring healthy areas under similar conditions, and at the same time detailed malariological examination of each area is carried out, it is possible to estimate the mortality due to endemic malaria. The following table gives the death-rate for a period of three years of a group of 34 healthy villages (average spleen-rate 4 per cent., 727 children) compared with a group of 33 hyperendemic villages (average spleen-rate 80 per cent., 840 children):—

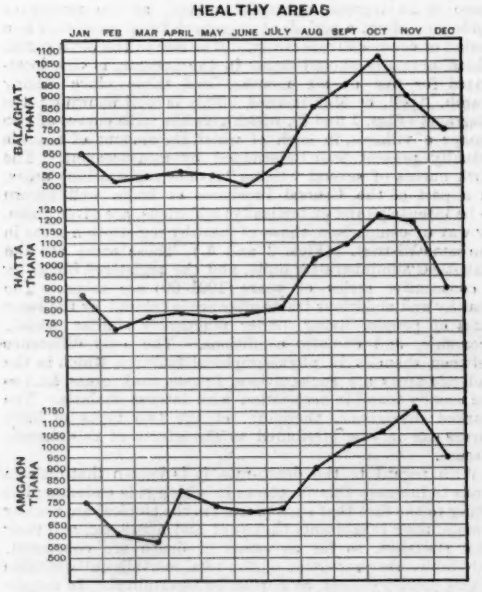
—	Death-rate per 1000.		
	1908.	1909.	1910.
1. Group of healthy villages	24	22	33
2. Group of hyperendemic villages	38	32	44

The existence, therefore, of malaria of a hyperendemic nature in the one tract caused an average increase of 12 per 1000 in the general death-rate.

It is the custom for the village registration agency in India to return from 70 to 78 per cent. of all deaths occurring in hyperendemic areas as "due to fevers"; verification of 300 of these deaths showed that 50 per cent., or 38 per cent. of the total mortality, might actually be ascribed to malaria. Taking the average death-rate of such an area as 35 per 1000, the malarial mortality would thus be 13·3 per 1000, which agrees closely with the figure—viz., 12 per 1000—by which the death-rate of a malarious locality exceeds that of a healthy one.

The mortality of malaria falls most heavily on the young, children aged from 2 to 8 years being the greatest sufferers (the earliest case of infection which came under my observation was an infant aged 4 months); and there is evidence to show that it rises *pari passu* with the endemic index.

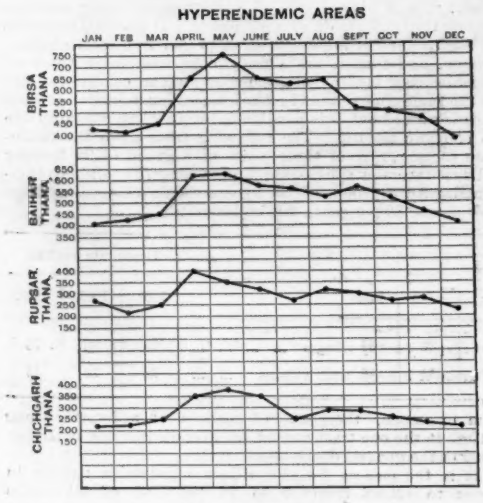
FIG. 3.



Birth curves of healthy registration areas in a district of the Central Provinces.

Further investigation into these questions is desirable. With reference, however, to the restricted area concerned in these observations, the following conclusions may be drawn: 1. Epidemic malaria causes a marked fall in the birth-rate of the following year, chiefly noticeable during the months of June and July. 2. Endemic malaria, while not influencing the annual birth-rate, has a marked effect upon the seasonal distribution of births. 3. The malarial mortality of hyperendemic areas amounts to at least 13 per 1000 per annum.

FIG. 4.



Birth curves of malarious registration areas in the same district shown in Fig. 3.

A PRELIMINARY COMMUNICATION ON THE PATHOGENICITY AND VIRULENCE OF BACTERIA.[1]

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AND
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As much of the work on which this paper is based has not yet been published it is necessary briefly to review the work in order to bring out the argument clearly. First, then, we must consider the mechanism of fever production.

Friedberger showed that in animals which have been sensitised with serum (for the demonstration of anaphylaxis) a much smaller dose of the protein is necessary for the production of temperature variations than is necessary in unsensitised animals. He also showed that in the early stages after sensitising an animal a further dose of a protein will produce a rise of temperature, but later on the *same* dose will produce a fall of temperature. Finally, he showed that if anaphylotoxin be prepared *in vitro*, a small dose injected into an animal will produce a rise of temperature, a larger dose a fall. From these observations he concluded that these various effects were due to the formation of anaphylotoxin produced *in vivo* on the one hand and *in vitro* on the other, and that the various effects depended on the amount exhibited.

Vaughan and Wheeler have shown that repeated doses of protein or bacteria produce temperature variations, the type of variation depending on the dose and frequency of inoculation. They consider that protein and bacteria contain a preformed toxic molecule.

Hort and Penfold have shown that temperature variations occur in animals when these are inoculated with certain bacteria. They consider that the temperature variations are due to a substance they designate pyrogen, which substance is supposed to be liberated from the medium on which the bacteria are grown.

We have been able to show the following.

1. Given a sufficiency of ferment in an animal, varying quantities of protein or bacteria will produce, when injected, the following conditions:—

(*a*)	A sufficiently small dose	= no temperature variation.
(*b*)	A larger dose	= a temperature rise.
(*c*)	,, ,,	= a greater rise.
(*d*)	,, ,,	= less temperature rise.
(*e*)	,, ,,	= no temperature variation.
(*f*)	,, ,,	= a temperature fall.
(*g*)	,, ,,	= a greater fall followed by death.
(*h*)	,, ,,	= acute death, so-called anaphylaxis.

If, however, there is insufficient ferment present to start with, acute anaphylaxis can never be produced, and so on.

2. Proteolytic degradation bodies, so-called anaphylotoxin, manufactured *in vitro* produce effects parallel to the above according to the dose.

3. That by producing varying stages of anti-anaphylaxis (that is to say, the condition following the anaphylactic shock in which recovery has taken place), the conditions following a further dose depend on the amount of ferment used up by the first dose. Friedberger came to similar conclusions from his work. For example, if all the ferment is used up by the first dose the second dose produces no temperature variation. If most of the ferment is used up the second dose produces a temperature rise. If little ferment is used up the second dose produces a temperature fall.

4. By inoculating the tissues of animals sensitised to protein or bacteria into a normal animal, that these passively sensitised animals acquire the power of developing temperature variations after injection of the specific protein.

And we were able to show that if the amount of ferment—

[1] A paper communicated to the Royal Society of Medicine on Jan. 21st, 1913.

i.e., the sensitised tissue injected—were kept constant, temperature manifestations varied inversely with the amount of the protein subsequently injected, and by keeping the protein constant and the ferment variable similar results were obtained. Also, if normal tissues of animals were injected into normal animals, these animals developed the power of giving temperature variations with smaller doses of any protein than normal animals, this power being due to an increase in the normal ferments, specific or non-specific.

From these observations we have been able to deduce:—That temperature variations are due to the interaction of the substance injected and the ferments present normal or induced. That the substance which gives rise to the temperature variations is an early degradation product of proteolytic disintegration of the injected substance. That the rise and fall are both due to the same substance and not different stages of degradation of this substance, but to its rate of accumulation. The substance in large amounts produces a fall of temperature, in small amounts a rise; so that the results depend on the relative amounts of substance injected and ferment present. If, then, there is sufficient ferment present, any stage can be produced from a single dose, according to its size, from a temperature raising effect, through a temperature depressing, through so-called anaphylaxis to the acute Auer Lewis phenomenon or acute anaphylaxis.

The toxicity of bacteria not possessing an exotoxin was formerly considered to be wholly due to the liberation of an endotoxin. Friedberger considers that toxicity is due to the formation of anaphylotoxin from the endotoxin, but does not absolutely deny the possibility of the endotoxin being directly toxic. Now, the views held at present with regard to the endotoxin are that it is (1) a toxic substance secreted in the animal body; (2) a preformed toxic molecule which is liberated by breaking up of the bacterial cell (*a*) in the animal body by antibodies, (*b*) *in vitro* by alcoholic potash, (*c*) *in vitro* by watery potash, (*d*) *in vitro* by freezing and thawing or by freezing and grinding.

We have been able to show that the so-called endotoxin is really the toxic proteolytic degradation bodies liberated from the bacterial protoplasm by the action of the tissue ferments, and that accumulation of this body in bacterial infection is the cause of the symptoms and death, and is the same for all bacteria, and that this is the same substance obtained by Friedberger *in vitro* or from the peritoneal cavity, using the peritoneal cavity as a test-tube.

We conceive that the toxicity of a bacterium depends upon (1) the ease with which its protoplasm is accessible to ferment action; (2) the nature and amount of ferment present. Thus, if a bacterium is fragile, the ferments present can attack the protoplasm easily, the toxic substance is liberated readily, and the symptoms depend on the amount of accumulated toxin at any given moment. On the other hand, if the bacterium is tough, for example, the tubercle bacillus with its fatty capsule, the ferments can only act on it very slowly, and consequently the rate of production of toxin is very much slower. Again, within limits, an increase in the ferment will increase the rate of liberation of toxic material from the bacterial protoplasm.

It is said that an animal dying from any form of bacterial infection is supposed to die from the specific poison—i.e., the endotoxin. Now we have been able to show that the blood of these animals contains an intensely toxic substance, which when inoculated into guinea-pigs intravenously in doses of from 5 c.c. to 10 c.c. produces acute death with the typical symptoms and post-mortem appearances of proteolytic degradation body poisoning. We have obtained this syndrome with the blood of rabbits dying from chicken cholera, coli, danysz, dysentery, and phlei, and the blood of guinea-pigs dying from staphylococcus, tubercle, proteus, and prodigiosus. We have also produced the same syndrome with the blood of animals which have died of toxæmia from the above-mentioned dead bacteria. The number of bacteria inoculated with the blood of these animals is extremely small, and is quite insufficient in itself to cause acute death of the type mentioned. In fact, we have shown that when bacteria are completely broken up by freezing and thawing or by grinding, so as to liberate the "endotoxin," death of this description only rarely occurs, and then with quantities of over 20 mgm. dry weight. We have succeeded in producing acute anaphylactic death with tubercle bacillary emulsion (B.E.), coli, and proteus. With all other organisms with large quantities intravenous injection causes delayed death (delayed anaphylaxis). The animal develops rigors, ruffling of the coat, fall of temperature below 94° F., paresis spreading from the posterior to the anterior extremities, and disordered respiration. On death the post-mortem changes are all the same—viz., congestion of the right side and veins, distended gall and urinary bladders, and a certain degree of lung distension. Now these symptoms and post-mortem appearances are identical with those produced by inoculation of egg albumin into egg sensitised guinea-pigs, in doses too small to cause acute death (or where the ferment is insufficient to cause acute death). Now we have noticed that guinea-pigs dying of any bacterial infection die with these same symptoms and post-mortem appearances. The results obtained by Arima with so-called typhoid toxins—i.e., the soluble and insoluble typhoid protoplasm—are identical with these. Vaughan and Wheeler have produced tissue changes in animals by the repeated inoculation of egg albumin which are exactly the same as those produced by bacterial infections.

Thus we see that the toxic substance liberated from bacteria in large quantities produces in normal animals symptoms of acute proteolytic degradation body poisoning, in smaller quantities great fall of temperature, paresis, rigors, &c., in smaller quantities still fever; and that the so-called endotoxins only give rise to those symptoms when the various ferments have been able to produce the necessary accumulation of degradation bodies to give rise to the symptoms. In animal infection the difference between the symptoms produced by the different bacteria depends on the distribution, rate of multiplication, and consequent liberation of the degradation bodies. For example, a characteristic clinical picture may be obtained with certain bacteria due to local cumulative effects. In certain structures where the organism is normally present in large quantities, and is continually there undergoing proteolytic degradation—for example, in the intestines—we always note in coli infections intense hyperæmia of the mucous membrane and hyperæmia of Peyer's patches in guinea-pigs.

A similar condition was noted by Schittenhelm in dogs, by injection of hydrolytic degradation products of bacilli coli. The acute toxic material of Vaughan and Wheeler, Schittenhelm, &c., are really early hydrolytic cleavage products and not unaltered bacterial protoplasm.

Friedberger, in his paper on anaphylatoxin fever, drew attention to the similarity between certain features in the syndrome of bacterial infection and those produced by anaphylatoxin.

To summarise. 1. Endotoxin as originally understood does not exist. The bacterium does not liberate a primarily toxic substance. 2. The bacterial protoplasm itself is not directly toxic. 3. The bacterial protoplasm becomes toxic on exposure to ferments. 4. The degree of toxicity depends on the accessibility of bacterial protoplasm and concentration of ferment. 5. As we shall show later, if the amount of ferment is very large, lysis occurs so rapidly that the bacterial protoplasm is broken down to non-toxic substances.

Now with regard to the ferment and its formation. Working on the early stages of the formation of a hæmolytic antibody in rabbits to human red cells, the development of the specific antibodies can be traced through the following stages from the panenzyme. Complement in its simplest form must be regarded as panenzyme, which will attack any form of protein, though slowly. In its earliest stage the specific ferment occurs in such a condition that when exposed to the specific antigen at 0° C. it combines with it, and it is found that the complement, which would otherwise activate sensitised homologous antigen, has been removed, but that the other complements are left free. This ferment is destroyed by heat at 56° C., and cannot be reactivated by the addition of fresh complement. The next stage is the development of a thermolabile amboceptor, which combines at 0° C. and does not fix complement in the cold and by itself will agglutinate. The final stage is the development of the thermostable amboceptor. In the normally occurring hæmolytic antibody (e.g., in rabbits to sheep's red cells) all three stages may be demonstrated to occur at the same time, and it seems that the younger the animal the less differentiated the ferment is. The antibodies to bacteria apparently go through the same stages, but it is only in certain cases that the whole process can be traced.

Thus we consider that the complement is an enzyme, and the amboceptor is a kinase or coenzyme which activates and adjuvants the former.

From the above work we thought that organisms were not pathogenic because they produce endotoxin, but were pathogenic to animals because the animals had ferments which were capable of acting on the bacteria so as to cause an accumulation of proteolytic degradation bodies, which would inhibit phagocytosis and allow the bacteria to multiply.

With regard to phagocytosis we shall shortly publish a paper with Dr. Stanley Warren in which are shown the following: 1. Carbon particles and bacteria to which the animal has no ferments act as innocuous substances and are phagocytosed by the polymorphonuclear neutrophiles, and these in turn by endothelial cells. 2. In an animal which is immune from the presence of a large quantity of ferment the bacteria are very rapidly broken down beyond the toxic stage, and so are innocuous, and the usual sequence of phagocytosis occurs. 3. In an animal in which the ferments are unable to completely break down the bacterial protoplasm quickly enough the toxic proteolytic degradation bodies are liberated, and these act aggressively, inhibiting phagocytosis. If these toxic bodies accumulate at a sufficient rate the animal dies and the endothelial cells do not appear in the exudate. If, however, the toxic bodies do not accumulate so rapidly, the polymorphonuclear neutrophile cells, after a considerable increase in numbers, are able in time to phagocytose the bacteria, and eventually the usual sequence, though delayed, occurs.

So we would say that an animal is immune to a bacterium (1) if the bacterium is unacted on by the ferments and so remains innocuous, (2) if it is so rapidly broken up by the ferments present that its proteolytic degradation bodies are quickly reduced to non-toxic ones, and so it again becomes innocuous. And an animal is susceptible to a bacterium if the ferments can split off from the bacterium toxic substances in such amount as to inhibit phagocytosis. Thus to a given bacterium an animal may have very little ferment action, and little toxic substance will be split off to act aggressively, so that phagocytosis will occur and the animal will be unaffected. If, however, the ferment activity is greater because there is more ferment, or because there is a specific ferment, or because the bacterium is more fragile, then toxic substances will be liberated in sufficient amount to act aggressively, so that phagocytosis will not occur, the bacteria will multiply, and septicæmia will ensue (or the ferment may destroy the bacterium, but may be present in insufficient amount to degrade the protoplasm sufficiently rapidly to render it non-toxic, so that these toxic substances liberated will kill the animal). Further, if the ferment activity is still greater the bacteria will be rapidly degraded beyond the toxic stages, aggressive substances will not accumulate, phagocytosis will occur, and the animal will recover.

First, then, we will take organisms to which the ferment activity normally is very low, such, for example, as the bacillus mycoides (a soil organism superficially resembling the anthrax bacillus, but naturally incapable of growth at the body temperature and posessing flagella), the timothy grass bacillus, and the smegma bacillus. These organisms, when injected into the animal body, produce in the case of the bacillus mycoides no lesions (even when this organism is educated to grow at body temperature). In the case of the timothy grass bacillus a plastic peritonitis occurs with pseudo-tubercles, with massive doses in the guinea-pig, from which the animal recovers. The infection only proves fatal on the addition of butter, and only Rabinowitch has been able to pass the strain on subsequent inoculation; other observers repeating her work have failed. The organism produces no disease in rabbits.

A series of guinea-pigs were inoculated with 20 mgm. dry weight of these organisms. In the case of mycoides, after a week it was found that the intraperitoneal inoculation of an agar slope of mycoides grown at 37° C. produced death of a sensitised guinea-pig in 60 hours. The post-mortem appearances were œdema of the abdominal wall, slightly turbid peritoneal effusion, enlargement and congestion of the spleen, liver, and kidneys, moderate distension of the lungs, engorgement of the right side and veins. The organism was recovered in pure culture from the œdema and peritoneal fluid, from the spleen, gall-bladder, urinary bladder, and heart's blood. Microscopically the organism was seen in the capillaries of the spleen and liver and was non-sporing. The post-mortem appearances were thus indistinguishable from those of anthrax.

With the timothy grass and the smegma bacilli an inoculation was made of one 24-hour glycerin agar slope intraperitoneally into each guinea-pig correspondingly sensitised one week previously. Death occurred in from ten days to a fortnight. The post-mortem appearances were emaciation and hair falling out, miliary tubercles throughout the body, some degree of plastic peritonitis in addition to the usual pseudo-tubercles that occur with the inoculation of these organisms into normal animals. The omentum was rolled up, infiltrated, and studded with tubercles. The organisms were recovered from the heart's blood in addition to other sources. The microscopical appearances were those of marked epithelioid reaction with the organisms in the lesions, and in the centre of some of the lesions typical granular necrosis. The post-mortem appearances were thus indistinguishable from those due to an intraperitoneal injection of tubercle bacilli.

Parallel to these is an experiment in which we were able to produce acute miliary tuberculosis in a rabbit with a very small quantity of human tubercle bacilli. The rabbit was inoculated with about 0·05 mgm. of human tubercle bacilli 14 days after sensitisation with 50 mgm. of killed pulverised tubercle bacilli. The rabbit died in one week. In a similar way Duval and Couret have shown that experimental leprosy lesions can only be produced in monkeys after previous inoculation with dead leprosy bacilli.

We found that the sensitive period for infection was from six to ten days after the sensitising dose. If, however, the second inoculation is given to a sensitised animal after an interval of a fortnight instead of a week the animal recovers and does not develop the disease, unless a much larger second dose is given than in the above experiments. Later still the animal becomes so immune that the second dose, to produce any symptoms, has now to be so large that it is only capable of producing delayed toxic death, the animal not living long enough to develop septicæmia. The reason for this is that the ferment is increasing in quantity and is becoming more specialised as the length of time from the sensitising dose increases. And only by using the methods we are just coming to can septicæmic death be produced.

Secondly, we will consider organisms to which ferment activity is relatively high, so that the guinea-pigs are immune from this reason. Organisms of this description are Hoffmann's bacillus, sarcina, proteus Zenkeri, staphylococcus pyogenes aureus, streptococcus erysipelatis, and cyanogenus. We found that in trying to produce lesions with these organisms by the previous method we were unsuccessful, and in most of them the large initial doses of the bacilli, 10–20 mgm. dry weight, produced death from toxæmia, with occasional terminal coli, &c., infections. From this we concluded that the available ferment present was capable of rendering non-toxic relatively large quantities of bacteria. Such being the case, we thought that if by some means we could (1) prevent the ferment getting rapidly at the bacterium, or (2) delay ferment action, we should be able to produce septicæmia with these organisms; for we should prevent the rapid breaking down of the bacteria, and so allow aggressive substances to be formed. The bacteria would then be able to multiply *in situ* until the available ferment was so reduced that the organisms would be able to pass into and multiply in the blood stream. To obtain this result we injected the bacteria in 15 and 30 per cent. gelatin, and 2, 3, and 5 per cent. saline. The gelatin was used with the idea of delaying the access of the ferment to the bacteria, and of keeping the degradation products formed in their immediate vicinity and so produce around them a state of ferment equilibrium. The bacteria, then, as a result of this could multiply. The viscosity of the gelatin would further tend to delay the advent of the phagocytes. The gelatin might be thought to be able to produce toxic results by itself, which we found not to occur, or in adjuvanting the toxic substances formed from the bacteria by degradation bodies from the gelatin itself. That this latter apparently is not the case can be seen from our experiments in which egg sensitised guinea-pigs, receiving a second dose of egg albumin, so as to produce a great fall of temperature lasting for hours, were not susceptible to several slopes of staphylococcus inoculated

simultaneously, though degradation bodies from the egg must have been present.

The hypertonic saline, as has been shown by Friedberger and his co-workers, inhibits ferment action, and we conceived that by injecting hypertonic saline into the peritoneal cavity the ferment action would be delayed until the necessary dilution of the saline had occurred by osmosis. We will discuss the effect of hypertonic saline on the bacteria later. Working by these methods we were able to produce fatal septicæmia with all these organisms, but the amount of bacterial substance required was very different with the different bacteria. The less primarily toxic the bacterium was, the more was required to produce septicæmic death.

Except in so far as the gelatin method can be used for demonstrating that where large amounts of ferment are presumably present, the amounts of bacterial substance required to produce septicæmic death are correspondingly large, in the light of further work we do not consider the gelatin method a good one for proving immunity due to large quantities of ferments; for we have been able to produce by this method, but not by the saline, acute septicæmic death with an unpassed mycoides (growing 37° C.). This can readily be explained. Friedberger was able to produce anaphylotoxin in the peritoneal cavity of guinea-pigs with any bacterium. We have noted that where large amounts of coagulated egg albumin are introduced into the peritoneal cavity toxic substances are formed from it, producing a fall of temperature. In the same way similar substances can be liberated from the bacillus mycoides, and in the viscid gelatin, zones of ferment equilibrium become established round the bacteria; the ferment then is incapable of destroying them, and by the time the delayed phagocytes arrive at the bacterium the aggressive substances prevent phagocytosis and the organism is able to survive.

Thus we have proved that the pathogenicity of bacteria depends upon the activity of the ferments in the animal host. If there is no, or slight, activity the organism is non-pathogenic, if there is a high degree of activity again the bacteria are non-pathogenic; and by either increasing or diminishing the ferment activity, as the case may be, the bacteria may be rendered pathogenic.

Now with regard to virulence of bacteria. This must be regarded as entirely an educative property acquired by the bacterium. Gal showed that bacteria could be rendered virulent by cultivation in the presence of an enzyme, such as the enzyme of yeast cells. He further showed that virulent bacteria could more readily undergo disintegration than non-virulent, and demonstrated a so-called antitryptic effect.

We have shown (1) that bacteria which are primarily non-pathogenic can, after passage through a sensitised animal, become so altered that they now produce disease in a normal animal—that is to say, they can be acted upon by the normal ferments so readily that sufficient aggressive substances are formed; (2) that organisms which have been obtained from the blood of septicæmic animals, which are normally immune owing to the high activity of the ferment, inoculated into normal animals, will produce disease and death; and (3) that some organisms when they become virulent can develop a capsule. With regard to the first of these points we have been able to produce disease followed by death in normal animals after inoculating with passed bacillus mycoides, timothy grass bacillus, and smegma bacillus, not only in guinea-pigs in which the original passage was conducted, but also in rabbits and rats. In the case of the bacillus mycoides, it eventually became so virulent after several passages that one-twentieth of a 24-hours agar slope killed a normal guinea-pig weighing 300 grm. in about 36 hours. One-twentieth of an agar slope killed a rat in 24 hours, and half an agar slope killed a rabbit in 24 hours. Finally, 18 guinea-pigs which had been placed in cages in which other guinea-pigs had died from the disease, all died as the result of intestinal infection. It is interesting to note that one guinea-pig which was pregnant was found to have the bacillus mycoides in pure culture in the amniotic fluid. With regard to the timothy grass and smegma infections, the bacteria when isolated or when injected in the ground-up spleen produced in normal guinea-pigs death with miliary tuberculosis and enlargement of the lymphatic glands in the chest in from four to 20 days. The organism has, as a result of repeated passage, now become so virulent that septicæmic death will occur in four days.

The organisms when inoculated intraperitoneally into a rabbit in small quantity produce death in a week with general miliary tuberculosis, slight fibrinous peritonitis, and enlarged glands showing miliary tubercles in the chest This is particularly important because lesions are not produced in the rabbit by the unpassed bacteria.

With regard to the second group of organisms, these, when passed, produce septicæmia with very small quantities without the aid of gelatin or hypertonic saline. It was found that the bacillus mycoides which ordinarily has flagella and no capsule in the animal body develops a capsule and loses its flagella when it becomes virulent.

We will first discuss the composition and function of the capsule. We conceive that the capsule is composed of extruded bacterial cytoplasm, which is extruded for the purpose of engaging the ferments and preventing them from reaching the bacterium itself, and causing its death and destruction. It appears to us that the mechanism is to produce a state of ferment equilibrium around the bacterium, so that the bacterium is shielded from the further action of the ferment and is able to grow and multiply. Whether this is successful or not depends upon the relative amount of bacterial protoplasm and ferment activity. We are aided in this conception by the action of hypertonic saline, noted in our experiments. The hypertonic saline in addition to hindering the action of the ferments also appears to have an influence on the bacterium. The bacterium being in a hypertonic solution is subject to osmosis, the result of which is that diffusion of the bacterial cytoplasm occurs, thus forming a capsule in which the same condition of ferment equilibrium can be maintained in the presence of the weakly acting ferments.

In the case of the gelatin similar zones of equilibrium are maintained around the bacteria in the gelatin. The gelatin prevents rapid removal of the degradation bodies produced around the bacteria. It is conceivable also that the bacteria exude a little protoplasm into the surrounding medium which may be more soluble than the capsules ordinarily demonstrable. This is kept in position by the gelatin, so that the necessary equilibrium zone can be maintained. This is seen in the case of our experiments with the proteus Zenkeri, where an unpassed strain was injected in gelatin and in 5 per cent. saline. Seven agar slopes injected in 5 per cent. saline produced no result beyond a transitory fall of temperature, but four agar slopes in gelatin produced toxic death and eight slopes produced septicæmia. The difference in the two cases would appear to be due to the gelatin temporarily acting as a containing capsule preventing the removal of the aggressive substances.

We would conceive that exotoxin is really this capsule formation in an exaggerated degree, but differs in that the bacterium diffuses its protoplasm into the surrounding medium instead of retaining it in its immediate vicinity. And we regard exotoxin as soluble bacterial protoplasm which only becomes toxic on contact with ferment. The reason why we are led to conclude this is that with bacillus diphtheriæ and bacillus Hoffmann a septicæmia has never been produced. This appears to us to be due to the fact that zones of ferment equilibrium do not occur intimately around the bacterium, and so the ferment, which is apparently of high activity, is able to penetrate and kill the bacteria, the animal dying from toxæmia. The proof of the high ferment activity is that the guinea-pig can withstand large doses of these organisms if inoculated in the ordinary way, and that the animal does not take the disease after sensitisation. Now we have been able to obtain a Hoffmann and diphtheria septicæmic death by means of the gelatin and saline methods.

From this we conclude that by the gelatin method we were able to keep the exuded bacterial protoplasm in intimate contact with the bacterium, so that a zone of ferment equilibrium could be established round the bacterium, forming a protective sheath against the further action of the ferment. In the case of the saline, the inhibition of the ferment action and the exudation of the greater amount and the lessened tendency to diffusion of the bacterial protoplasm will bring about the same result.

That these animals die from proteolytic degradation body poisoning can be demonstrated by the fact that the inoculation of their blood intravenously into a normal guinea-pig produces acute toxic death (acute anaphylaxis). This brings the diphtheria bacillus into line with the other bacteria.

And it shows that death from bacteria possessing an exotoxin or not is always due to the same cause—i.e., proteolytic degradation body poisoning.

In order to further this view several points require explanation. How does toxin become toxoid? Toxins may be converted into toxoids by heat, by standing, by sunlight, and by drugs such as iodine. With regard to heat, if exotoxin is bacterial substance it will contain the autolytic ferment of the bacterium. Now, on moderate warmth or standing this ferment starts degrading the bacterial protoplasm, and after a time no further degradation can occur (unless the end-bodies are removed) owing to ferment equilibrium, so that at any time there will be present (1) unaltered bacterial protoplasm, which on inoculation can be converted into toxic early degradation bodies; (2) early degradation bodies, which on further action are rendered non-toxic; and (3) non-toxic end-bodies.

The much smaller amount of unaltered protoplasm is more rapidly attacked by the ferment present in the animal, so that the toxic bodies only tend to be present at any time in small amount, producing local changes at the seat of inoculation and no general poisoning. On this assumption we can also explain how it is that a toxoid can act as an antigen. Again, this explains why the fixation of complement occurs when toxin and antitoxin are added together, for we must consider the antitoxin as a co-enzyme or amboceptor.

Then, with regard to the difference between the L 0 and the L + dose, on the principle on which these are worked out, no account is taken of the normal active ferment present in the guinea-pig.

With regard to chemicals such as iodine converting the toxin into toxoid, we have the observations of Friedberger and Schittenhelm that iodised albumin can act as an absolutely foreign proteid to the homologous animal, so that iodine acting on bacterial protoplasm may so alter it that the ferments which could easily attack the ordinary toxin can now only very slowly act on the iodised "toxin." But as we know, iodised toxoid can produce antitoxin, that is, a ferment against the unaltered toxin; this is parallel to the observation of Schittenhelm that guinea-pigs sensitised against iodised egg albumin can react not only to that but to plain egg albumin. This means that the newly evolved ferment can also degrade the non-iodised homologous proteid.

Though we have discussed so far pathogenicity and virulence separately, yet we have come to the conclusion that they must be considered together. Thus an organism by passage may become so altered that it is able to infect and multiply in an animal in which there is no specific ferment. The mycoides could only become pathogenic in the first instance on inoculation into a sensitised animal—that is, an animal that has acquired a certain amount of specific ferment. After passage this organism is capable of producing disease in a normal animal—that is, an animal which only contains panenzyme. Hence we must conclude that the bacterium has become so altered that it can be attacked by the panenzyme at such a rate that sufficient aggressive substances are formed to prevent phagocytosis, and developed the property of extruding a capsule to form a protective zone in which ferment equilibrium occurs to prevent the enzyme from penetrating and destroying it. Thus we see that a bacterium which is virulent may also be pathogenic. The passed smegma and phlei are similar.

Now we must consider the bacteria which are not under ordinary circumstances pathogenic, and which do not become so when the ferment is raised against them by the production of specific antibodies. The first point we must discuss is the activity of the ferment. We have come to the conclusion that septicæmia is not produced by a process of general ferment equilibrium in the whole animal body; but that septicæmia occurs if the relation between the quantity of bacterial protoplasm and the ferment activity is such that aggressive substances are formed from the bacterial protoplasm by the ferment in sufficient amount and remain as such long enough to inhibit phagocytosis.

Now first of all we can compare *in vivo* experiments with experiments carried out in the test-tube. From theoretical considerations the quantity of ferment only influences the rate of degradation, not the amount. So that *in vitro*, no matter how much ferment is present, ferment equilibrium eventually takes place and the same amount of the undegraded material remains in the two cases. This would mean unaltered bacterial protoplasm. We know from experiments *in vitro* that under these conditions after ferment equilibrium has occurred the bacteria start to multiply again. Now, taking two guinea-pigs with the same quantity of ferment, if in one the ferment activity is unaffected and in the other the ferment activity is damped, and into each the same amount of living bacterial protoplasm is inoculated, ferment equilibrium should occur in both, and septicæmia, if it occurs in one should occur in the other, but at different times. But we find that where the ferment has been damped septicæmia occurs, and not in the other. Hence we must conclude that septicæmia is not produced by general ferment equilibrium in the animal body alone. Taking account also of rate of removal of end bodies in both cases, these are being gradually removed, in the one case more rapidly than the other; so that in both cases, theoretically, if the amount of ferment is sufficient, the primary substance should be completely broken down. Hence we must conclude that the occurrence of a septicæmia depends upon the presence at any given time and the maintenance of early degradation products sufficient to prevent phagocytosis. Where the ferment activity is great, the accumulation of the aggressive early degradation bodies is temporary, so that the inhibition of phagocytosis is only temporary, and this ceases directly the bodies are further degraded.

Finally there remains for discussion the fact that these organisms, which by our methods have produced septicæmia, are now able when directly inoculated into a normal animal, and in much smaller doses, to produce septicæmia. The fact that they can do so is a great argument against fermentative equilibrium being the sole cause of septicæmia.

Taking two normal animals and inoculating the same quantity of passed and unpassed bacteria, in the former septicæmia occurs, in the latter nothing. Here the factors are the same: the same activity, the same weight of bacterial protoplasm; hence if septicæmia were solely due to general ferment equilibrium septicæmia should occur in both. Hence we conclude that the difference is due to the retention around the passed bacterium of bacterial protoplasm in various stages of degradation, forming on the one hand an aggressive shield against the phagocyte, and on the other against the ferment, so that the bacterium can multiply. Here again we believe that a bacterium which is virulent is so in virtue of its being able to exude some of its cytoplasm around itself and not into the surrounding medium, and we should expect that on these lines a diphtheria bacillus which became virulent would not produce soluble exotoxin, but keep its halo of bacterial substance around itself. That this is probably so is brought out by the well known observation that a very virulent diphtheria bacillus produces very little exotoxin.

Conclusions.

1. Ferments form an important normal mechanism of defence against bacterial invasion. The ferments performing this important function are: (*a*) the normal panenzyme, (*b*) the slightly differentiated specific enzyme, (*c*) the thermolabile specific coenzyme or amboceptor, and (*d*) the thermostable specific coenzyme or amboceptor. These last two adjuvant and accelerate the action of the ordinary enzyme. The action of the ferment is to bring about proteolytic digestion of the bacteria.

2. Exotoxins and endotoxins are bacterial protoplasm and are not primarily toxic *per se*, but only become so when acted upon by the ferments.

3. The action of the ferments on the bacterial protoplasm is to produce toxic early proteolytic digestion bodies. These bodies, besides being toxic to the animal, are also aggressive in the sense of Bail—i.e., are anti-phagocytic.

4. The action of this toxic substance, besides being aggressive, is to produce (*a*) in large amounts, death; (*b*) in lesser amounts, fall of temperature; and (*c*) in small amounts, fever. This substance is the cause of death in all bacterial infections.

5. The virulence of a bacterium is dependent upon the power of exuding around itself a zone of its cytoplasm, which remains in position and acts as a protective shield. The production of a zone of ferment equilibrium in this shield protects the bacterium itself from the penetration of the ferment. The shield thus acted upon is also aggressive to phagocytosis.

6. Pathogenicity is due to (*a*) the virulence of the bacterium, and (*b*) the relative activity of the ferment to the bacterium. Thus we should say that immunity is due to ferment action and phagocytosis—i.e., it is cellulo-humoral.

THE JUGULAR PULSE.

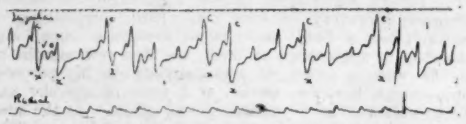
BY H. WALTER VERDON, F.R.C.S. ENG.

OBSERVATIONS made below on the deflections of the jugular curve may prove of interest to readers who, like myself, are following Dr. James Mackenzie's methods of clinical cardiography.

The c wave.—The absence of a dicrotic appendage from the *c* wave is proof that this wave is not the product of an ordinary arterial impression. On anatomical grounds alone it cannot be said to take its origin from carotid pulsation because, below the sinus, vein and carotid artery do not lie in contact, but are separated from one another by an interspace giving room for the lodgment of the vagus nerve. The wave might be regarded as resulting from pulsation of the subclavian or innominate arteries, but here again the absence of dicrotic appendage creates difficulty. On the other hand, relationship between venous and arterial columns is intimate in the neighbourhood of the aortic arch. The vena cava superior, conducting blood to the auricle from its tributaries in the neck, lies in touch with the ascending limb of the aorta, and embraces it on its posterior and right lateral aspects. During the sphygmic period, elongation of the arterial arch takes place, and elongation is followed by recoil. This lurch of the aorta, which is additional to pulsatory phenomena, common to all arteries, cannot fail to be instrumental in transmitting an impulse to the venous column, and the resulting wave must necessarily consist of simple positive and negative curves unattended by any dicrotic encumbrance. It is therefore suggested that the aorta is the source of origin of the *c* wave. (See Fig. 1.)

X and y depressions, and v, a, and c eminences.—Depression *x* occupies a prominent place in the jugular curve. It extends to a lower plane in the normal tracing than that attained by any other deflection, a fact indicating that here auricular pressure reaches its extreme limit of minus quantity. It is a landmark separating the territory of a cyclic period from that which precedes and that which follows it. It records the fraction of time when a period is closing with the end of ventricular systole and when another period is opening with the beginning of ventricular diastole, consequently an alternating series of *x* depressions and triple waves is the distinguishing feature of the jugular curve. (Fig. 1.)

FIG. 1.



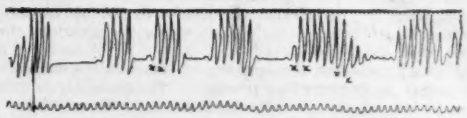
The declivity of the *c* wave is noticed in the above curve as descending to the fundus of the *x* depression unattended by a dicrotic appendage.

The figure occupying the cyclic period of the tracing and extending from the fundus of one *x* depression to the fundus of the next, although bearing the semblance of a triple wave, is in reality a simple curve deflected at its apical part by the upheaval of eminences usually differentiated by symbols *v*, *a*, and *c*. In the case of normal and slow pulses this simple cyclic wave is bisected at a point lying between *v* and *a* eminences by the interpolation of the *y* depression. But the *y* depression is not a constant feature. When pulsation rises above the normal beat-rate it appears only as a mere indentation of the curve, and when pulsation still further quickens it becomes entirely obliterated, leaving no trace of its presence behind.

Fig. 2 represents the curve of a very rapid pulse from which the *y* depression is absent. Figs. 3, 4, and 5 show the evolution of the *y* depression as the pulse slows down. In Fig. 3 it appears as a mere indentation interposed between the eminences *v* and *a* at the apical part of the cyclic wave. In Fig. 4, representing a pulse of normal rate, this depression splits the cyclic wave except at the basal part, forming two distinct undulations *v* and *a*. Fig. 5 represents a pulse of 35 beats a minute. The *y* depression completely bisects the cyclic wave and extends even below the plane of the *x* depressions which fix the limits of the cyclic period.

The *y* depression cannot, therefore, be regarded as representing a process in the cardiac syndrome essential to the maintenance of the circulation. It is caused by a momentary fall in intracardiac pressure when the muscle forming the wall of the right ventricle becomes attenuated by relaxation,

FIG. 2.

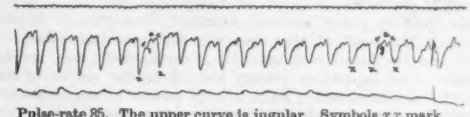


Pulse-rate 210. The upper curve is jugular, the lower radial. Symbols *x x* mark the limitations of the cyclic wave, which consists of a simple upstroke and downstroke. The upstroke of the cyclic wave corresponds with the period of ventricular diastole, the downstroke with that of ventricular systole.

and hence more open to the influence of aspiratory energy lodged in the media of the heart's environment.

Eminences *v*, *a*, and *c* also represent processes in the cardiac syndrome which are not essential factors in the upkeep of the circulation. *V* appearing at an early stage of diastole is formed by the recoil of the *a*.-*v*. septum, *a* by

FIG. 3.

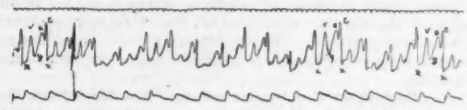


Pulse-rate 85. The upper curve is jugular. Symbols *x x* mark the limitations of the cyclic wave. Depression *y* appears as a notch between the eminences *v* and *a*.

auricular systole, and *c* by an impulse communicated to the venous column from the aorta.

The solitary jugular cyclic wave.—Having now given consideration to the *y* depression and to the upheaval of the *v*, *a*, and *c* eminences, which in turn deflect the curve of the solitary wave from its simple course, we must now enter upon a survey of the processes determining the rise and fall

FIG. 4.

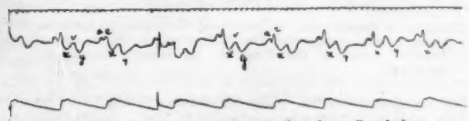


Pulse-rate 66. The upper curve is jugular. Symbols *x x* mark the limitations of the cyclic wave. Depression *y* splits the cyclic wave into two parts except at its basal zone.

of the solitary wave itself. These processes, it will be observed, constitute the essential forces of the circulation.

The pericardial sac consists of a tough, inelastic, fibrous membrane attached below to the aponeurosis of the diaphragm, above to the roots of the great vessels entering and leaving the heart, and in front to the upper and lower ends of the sternum. It serves the purpose of preventing undue

FIG. 5.



Pulse-rate 35. The upper curve is jugular. Symbols *x x* mark the limitations of the cyclic wave. The *y* depression is broad and wide, and completely bisects the cyclic wave, lending to the curve the semblance of duality.

expansion of the walls of the cardiac cavities under the aspiratory influence of intrathoracic negative pressure, which is never less in quantity than minus 8 mm. Hg, and sometimes attains a degree of elevation represented by minus 30 or 40 mm. Hg.

During systole the cone of the heart descends, drawing down with it the floor of the auricles, and occupies a

restricted space at the fundus of the pericardial sac. The venous column engaging the right auricle and filling the great veins entering this cavity also falls to a lower plane than that previously occupied by it, and is thus more fully exposed to the influence of a minus pressure environment. Thus the declivity of the solitary jugular cyclic wave runs synchronously with ventricular systole.

At the end of systole diastole begins. The cone of the heart expands, pushing backwards the *a.-v.* septum and occupying the pericardial sac almost to its full capacity. Since the tricuspid valves open towards the ventricle, they float with the blood stream and oppose no obstacle to its entrance; moreover, the opening of these valves causes no deviation in intracardiac pressure. Consequently, during the period of diastole auricle and ventricle constitute a single chamber in which pressures become instantly equalised. The inflowing venous stream, which gradually fills this single cardiac chamber and afterwards backs itself up in the tributory veins, neutralises intracardiac minus pressure, converting it to a positive quantity, and thus causes a steady rise in venous pressure.

In the jugular curve, when the pulse-rate is above 80, very little is noticed of the *y* depression, because the volume of the incoming stream is more than sufficient to keep pace with the relaxation of the ventricular wall, and because ventricular systole begins while auricular pressure is still rising; consequently the acclivity of the solitary jugular curve runs synchronously with ventricular diastole.

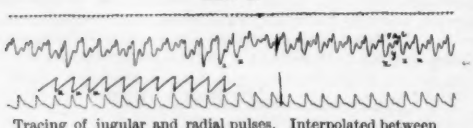
In the slow pulse, however, in which case diastole is prolonged, the wall of the ventricle becomes attenuated by extreme relaxation, and hence it is particularly open to the influence of aspiratory energy lodged in the media of the heart's environment. As a result minus pressure asserts itself in the auriculo-ventricular cavity, and is recorded by a negative deflection of the jugular curve recognised in depression *y*.

If deflections which do not represent processes essential to the maintenance of the circulation be eliminated it is noticed that the positive curve of the venous pulse is coincident with the negative curve of the arterial pulse, and that the fall of the venous cyclic wave is contemporaneous with the rise of the arterial.

The jugular curve, then, consists of a sequence of cyclic waves arising from the interaction of two forces in the presence of limitations imposed by the pericardial sac. One of these forces consists of negative pressure lodged in the media of the cardiac environment, the other is exemplified by ventricular systole. These potential and these kinetic energies are engaged in filling and emptying the ventricles.

The effect upon the venous column resulting from the exercise of these energies is manifested by the appearance of a solitary wave occupying the entire cyclic period of the jugular pulse. When the jugular pulse is synchronised with the radial the trend of pressures, as indicated by the curves, is identical, except that they exist in inverse order of incidence. (Fig. 6.)

FIG. 6.



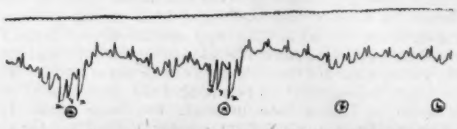
Tracing of jugular and radial pulses. Interpolated between them is a diagrammatic curve illustrating the trend of venous pressure uninfluenced by minor circulatory processes.

The respiratory curve.—The wide deflection of the jugular curve, which includes a sequence of many cyclic periods, results from the rise and fall of negative pressure in the thoracic cavity coincident with inspiration and expiration; ordinary or normal respiration produces a shallow deflection, gasping or forced respiration a deep one. Negative pressure in the thoracic chamber is maintained by sustained tension of the elastic fibre of the lungs, tautness of the bony and cartilaginous framework of the thoracic wall, tonus of inspiratory muscle, and integrity of pleural cavities.

During normal inspiration the gradient of intrathoracic negative pressure rises to minus 30 mm. Hg. During ordinary expiration and the pause succeeding it the gradient falls to minus 8 mm. Hg. During forced or gasping respiration the range of negative pressures reaches wider proportions, attaining minus 40 or 50 mm. Hg during inspiration. The greater width of range is induced almost solely by depression of the aponeurosis of the diaphragm, which while normal respiration is continued maintains a stationary plane.

Depression of the aponeurosis of the diaphragm has a particular effect on the jugular curve, as observed in Fig. 7.

FIG. 7.



The inspiratory deflections of the curve (*a*) and (*c*) are marked by deep *x* and *y* depressions resulting from descents of the aponeurosis of the diaphragm; at (*b*) and (*b*) the breathing is thoracic, and the aponeurosis remains on the same plane during inspiration and expiration.]

With the descending aponeurosis, the pericardial sac is drawn down, and together with this structure the heart and superior cava. As a result of the fall of the pericardial sac to a lower plane, an extended area of the auricular and venous walls and the contained blood column are exposed to the influence of intrathoracic and intrapericardial negative pressures, and the effect of these influences is registered in the deep deflections of the jugular respiratory curve. These deflections are made remarkable by the width and depth of the *x* and *y* depressions.

A CASE OF HAIR CAST OF THE STOMACH; GASTROTOMY; RECOVERY.

BY L. STOREY, M.B., CH.B. GLASG., M.R.C.S. ENG., L.R.C.P. LOND.,

LATE HOUSE SURGEON TO THE DEWSBURY GENERAL INFIRMARY.

HAIR casts of the stomach are of such comparative rarity that the following case seems worthy of being placed on record.

The patient, a girl aged 17, was admitted to the General Infirmary, Dewsbury, on June 29th, 1910, complaining of vomiting, loss of flesh, and general weakness. Small and unhealthy in appearance at birth, the first few months of her life were a source of great anxiety to her parents. Improvement, however, set in: at 3 years of age she was able to walk and at 5 years to go to school. At the later age a small "lump" was noticed in her abdomen. The medical man who was consulted gave it as his opinion that the child was suffering from "consumption of the bowels." This swelling slowly increased in size, and her general condition remained unsatisfactory throughout her school days—i.e., from 5 to 13—and during that time she was under medical care on six or seven occasions. During the next four years the local swelling slowly increased in size, whilst the general condition deteriorated, and at Easter, 1910, the vomiting was so persistent that she had to give up work. Swelling of the feet in the evenings, breathlessness and palpitation on exertion, pains in and swelling of the knee-joints, with an evening temperature of 104° F. necessitated removal to hospital. Save for the fact that when 2 years of age it was noticed that the left side of the head was "quite bald" and that small masses of hair were being passed by the bowel, the previous health was uninteresting. There was no history of insanity in the family, and the girl herself was considered to be "the life of the home."

On admission the patient was apparently anæmic and markedly emaciated. Her height was 4 ft. 2 in. and weight 3 st. 11½ lb. The hair was abundant, with plaits 14 in. in length, somewhat thin in the temporal regions, and of a mid-brown colour. Evidences of rickets were present. The temperature was normal. Save for a prolongation of the

first sound at the apex, unconducted and unaccompanied by accentuation of the second pulmonic, the heart was normal. Examinations of the lungs, urine, and blood were negative. The abdomen was distended generally. In spite of this, however, a distinct swelling was visible and palpable in the lower epigastric and upper umbilical regions. The swelling was hard and immobile. There was no free fluid in the peritoneal cavity. On July 28th, 1910, laparotomy was performed and a mass of hair was removed from the stomach. The patient made an uninterrupted recovery.

The mass of hair was hard and an exact cast of the stomach (see illustration). It weighed 2½ lb. In length it

Hair cast of the stomach weighing 2½ lb.

measured 10½ in., the great curvature 20 in., and the lesser 10½ in. Though not unique in dimensions, it is in my opinion the truest cast recorded.

According to Butterworth's[1] comprehensive article on this subject there have been 42 such cases reported, 39 of the series occurring in females. Two other cases were also recorded about the same time, one by Newbolt and Jones[2] and the other by Still.[3] The youngest case was that of a girl aged 8 years, and the oldest an insane man aged 43. In 75 per cent. of the cases the habit commences during the first few years of life. One would imagine insanity to be a more frequent cause. In only four of the cases, however, has it existed. The majority of hair balls are of small size. The smallest, recorded by Ilderton,[4] weighed 2¼ oz., whilst the largest on record, that of Mermet d'Hauteville,[5] weighed 6 lb.

I am indebted to the members of the honorary medical staff for permission to report this case.

Huyton, Liverpool.

[1] Journal of the American Medical Association, August 21st, 1909.
[2] THE LANCET, June 26th, 1909, p. 1829.
[3] THE LANCET, May 16th, 1908, p. 1412.
[4] Brit. Med. Jour., 1907, vol. i., p. 18.
[5] Journal de Médecine, Chirurgie, et Pharmacie, Paris, 1813, vol. xlviii.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SURGICAL SECTION.

Actinomycosis.—Streptothrix Infections.

A MEETING of this section was held on Jan. 14th, Mr. G. H. MAKINS, the President, being in the chair.

Mr. A. G. HAYNES LOVELL read a paper on Actinomycosis, with special reference to involvement of bone, and gave an account of a case in which the inferior maxilla was primarily involved. It was that of a man aged 23. On July 20th, 1911, pain began without cause around the left lower canine tooth, then pain in the first molar. The latter was extracted though apparently healthy. Then pain started in the second bicuspid in which thermal sensation was much impaired. This was extracted, but showed no sign of disease. On August 1st external jaw swelling appeared and pain still continued. On the 12th his temperature was 99° F. A mass of the size of a walnut was now present in connexion with the lower jaw. No sinus occurred nor sign of disease in the mouth. A skiagram by Sir James Mackenzie Davidson showed rarefaction and suggested an abscess at the root of the first bicuspid. There was no sign of new bone formation or periostitis. Three teeth in front of those extracted were loose and their sensation was diminished. A few days later an incision let out a little pus. A film of this showed no organisms, but a culture after eight days grew a streptothrix—Gram-positive and acid-fast. The sulphur granules were now found in the scanty pus. On August 24th pot. iod. gr. xv. t.d.s. was started. On Sept. 1st an autogenous vaccine was used and repeated at ten-day intervals. On the 5th the bone was scraped subperiosteally, and the pot. iod. increased to gr. xxx. t.d.s. On Dec. 9th the swelling was very much smaller, but the sinus persisted. A skiagram showed less rarefaction, but still an abscess cavity. On Feb. 16th, 1912, the difference between the two sides was only just perceptible, and treatment was stopped. The patient was still quite well. In remarking on the pathology of the condition, Mr. Lovell said that bone was usually involved by extension from disease of adjacent soft parts. The only region where an apparently primary disease of bone occurred in man was in the jaws. Here it was probably due to infection through sockets of carious teeth. Primary bone lesions had never been produced experimentally. Two cases of isolated foci in bones were reported—one in the lower end of the femur and one in the upper end of the tibia. Poncet gave the best description of bone involvement. There might be: (1) Periostitis due to adjacent disease of soft parts; (2) peripheral rarefaction (rare); (3) a central perforating type (case here described), the commoner type in man; (4) a central neoplastic type, common in cattle. The central perforating type might progress to parchment crackling and spontaneous fracture, but usually the bone was perforated in several places and sinuses resulted. Sequestra of any size rarely or never occurred. Toothache was an early symptom. Subsequently teeth became loose and their sensation impaired. There was little or no true bony thickening in these cases.

Mr. T. H. KELLOCK read a paper on Some Clinical Features of Actinomycosis. He stated that the occurrence of this disease seemed to be more and more frequent, and it had always to be borne in mind when discussing diagnosis. From its prevalence in people of all classes of society, of all ages, and in persons of various occupations, it would seem that the organism in some of its varieties had ceased to exist, as was formerly believed, solely on grass, hay, or straw, but had become almost ubiquitous. The disease was met with under two very different conditions: the simple or clean, and when septic infection had been superadded; and it seemed difficult to demonstrate the organism in the presence of the latter. This possibly explained the difficulty of microscopical or bacteriological confirmation in many cases.

Probably every case was infected through the alimentary or respiratory tracts, but it might be carried by the blood-stream to organs that did not communicate directly with these tracts. Once inside the cavities of the body the organism seemed to have a peculiar tendency to insinuate itself into ducts that opened on the surface and infect thus the salivary glands, liver, and vermiform appendix. His experience of the mode of spread was that it rarely did so by means of the lymphatic circulation, and it was very rare to find the lymphatic glands affected. Its preference seemed to be to spread by direct continuity of tissue, and, unlike tuberculosis, to ignore anatomical boundaries and cause adhesions by invading all and every structure with which it came in contact. It had been supposed that the portal vein was the means of conveying the organism to the liver when that organ had been found infected, but it seemed more likely that the hepatic infection was an independent one direct from the duodenum. For the purposes of the paper he was relying solely on cases that had come under his own notice. When the disease attacked the lower jaw the most marked feature was its painlessness as compared with a septic infection of the same part. Often the first indication was a small, red, puckered swelling on the face, preceded possibly by slight toothache or merely a feeling of tension. The spot enlarged, was found to be adherent to bone, softened in the centre, and if incised was found to contain very little pus. If the spot was small and isolated it was seldom followed by necrosis, and would often get well without any treatment beyond incision. The upper jaw was affected only very rarely; he had seen no example of it. In three cases he had found the disease affecting the centre of the cheek. In these cases he believed the infection was through the opening of the parotid duct. Infection of the various glands the ducts of which opened into the mouth was very common; he had found it in the parotid, submaxillary, and sublingual glands. In two cases he had seen the disease in the tongue, affecting the deeper parts. There was no surface ulcer. A rather soft, circumscribed, painless swelling of somewhat rapid growth without interference with the movements of the tongue, were the chief characteristics. When it affected the tissues of the side of the neck the most noticeable features were the marked fixation it caused and the manner in which it spread backwards, sometimes to the middle of the back of the neck. When the lung was the seat of the primary infection, adhesion to the chest wall often occurred rapidly. One met with chronic abscess at almost any part of the chest wall—under the heart, in the axilla, or just under the clavicle seemed the commonest places. Many cases of the disease attacking the vermiform appendix and cæcum had been recorded. Particular features in these cases had been the large amount of infiltration with comparatively little breaking down in the clean cases, and the curious behaviour of the abscesses when such occurred, lifting up the iliac vessels and infecting the psoas muscle in one case, coming to the surface in the middle line above the umbilicus in another. In one of his cases the right kidney was the part affected. The kidney was removed, under the impression that it was tuberculous, from a young woman, who besides a kidney tumour had pyuria and pyrexia. After prolonged treatment with large doses of iodide of potassium she got well, and remained so until lost sight of three or four years later. In all these cases the diagnosis was confirmed by bacteriological examination. The affections for which he had mistaken this disease, and known it mistaken by others, had been streptococcal infections in cases of the lower jaw and salivary glands; tuberculosis, sarcoma, carcinoma, gumma, and in one case for salivary calculus. To sum up, the chief clinical features were: its existence under two conditions—the clean and the septic; its comparative painlessness; the rather curious linear puckering which it caused in the skin; the way in which it infiltrated all the surrounding structures disregarding anatomical boundaries and causing adhesions; its disposition to enter ducts opening on to a mucous surface; the very little pus that was evacuated even when what appeared to be a collection of some size was opened; the rapid improvement after scraping and the administration of sufficiently large doses of iodide of potassium; and, lastly, the remarkably little deformity or disfigurement that resulted after treatment had succeeded in eradicating it.

Mr. A. G. R. FOULERTON read a paper on Some Points in the Pathology and Diagnosis of Streptothrix Infections.

SECTION OF LARYNGOLOGY.

Exhibition of Cases and Specimens.

A MEETING of this section was held on Jan. 10th, Mr. HERBERT TILLEY, the President, being in the chair.

The PRESIDENT exhibited the Chart of a patient, aged 10, with a continuous evening temperature of 100° F. for 14 days, with slight tonsillitis and enlarged glands, which had subsided. A swab tonsillar culture revealed streptococcus longus culture with staphylococci. Dr. Eyre also isolated a similar streptococcus from a bladder specimen. The opsonic index was 0·72 when an autogenous vaccine from the tonsil was injected. This was followed by a reaction. Ten c.c. of polyvalent antistreptococcal serum was injected (Lister Institute), and next day 1·25 millions of autogenous bladder streptococci. The temperature, which had mounted to 103°, subsided before the third injection of vaccine prepared from the bladder streptococci had been used. The marked improvement to the last vaccine was the feature of the case.—Mr. P. R. W. DE SANTI suggested the symptoms were due to a general streptococcal infection.—Mr. F. J. STEWARD related similar cases with recurrence of fever.—Dr. W. JOBSON HORNE did not attribute benefit to the vaccine.

The PRESIDENT also presented a case of application of Galvanic Puncture to a Tuberculous Ulcer of the Cord by the direct method under cocaine, the condition now being healed. Evidence of lung trouble with tubercle bacilli in the sputum was adduced. A case of Granular Congestion of the Left Cord, the result of an ulcer which had healed under potassium iodide, was also exhibited by the President.

Mr. C. I. GRAHAM presented a case of Cyst of the Pituitary Fossa, for which operation by the nasal route was discussed. The patient was admitted under Dr. Wilfred Harris with failing sight, temporal headaches, drowsiness, slow mental reaction, and incontinence of urine for several months. A skiagram showed the pituitary fossa to be flattened out and enlarged. Under intravenous administration of ether, an incision was made in the middle line from the tip of the nose into the lip, splitting the columella; the greater part of the septum was removed. The mucous membrane over the sphenoid was raised, and then the anterior wall and intersinous septum were removed till the pituitary fossa was opened (Cushing's method). Two drachms of fluid escaped. During the first 24 hours there were thirst and polyuria. The patient was now up and well, except as regarded his sight, which was improving.—Dr. G. WILLIAM HILL pointed out that in Cushing's operation the upper lip was turned up, and referred to the advantage in the use of Killian's long speculum.—Mr. STEWARD requested that full notes be inserted in the "Proceedings," as this was the first case dealt with by this procedure in England.—Dr. DAN MCKENZIE intimated that Hirsch, of Vienna, had found that the advantage of this route was the diminished danger from sepsis.

Mr. L. COLLEDGE exhibited two cases of Laryngeal Paralysis due to central lesions in the vagus area, probably tuberculous in nature.—The PRESIDENT recalled a case of syringomyelia in which somewhat similar signs were present.—Mr. F. A. ROSE related a somewhat similar case which recovered.—Dr. L. W. HEMINGTON PEGLER ascribed the lesion as due to a pachymeningitis.

Mr. G. W. BADGEROW'S case of Congenital Web of the Larynx, in which a white web was attached to the anterior two-thirds of the cord in a boy, aged six, was the subject of a prolonged discussion.—The PRESIDENT described a case in which coloboma iridis was also present.—Mr. C. A. B. HORSFORD recommended excision by the indirect method; it was well to be prepared for tracheotomy.—Dr. HILL recommended a laryngo-fissure kept open for one month, during which time a splint is inserted. A particular case of his cannot do without a tube, but can speak quite well.—Mr. A. S. HUTCHISON questioned the advantage of operation unless good articulation were obtained.—Dr. H. W. FITZGERALD POWELL considered that such cases were best left, though Lack's tubes used after a laryngotomy gave good results.—Dr. J. DUNDAS GRANT was of opinion that such a condition would call for tracheotomy during one of the exanthemata.

Dr. E. A. PETERS presented a case of Extraordinary

Mobility of the Tongue which could be passed into the post-nasal fossa.—Mr. G. W. BADGEROW indicated that irritation of the pharynx was the immediate cause of the use of the tongue.—Dr. J. DONELAN described that suicides in slave ships were caused by passing the tongue in this manner.

Dr. PETERS also presented a case of Multiple Papillomata of the Larynx which Dr. JOBSON HORNE considered should be dealt with by the direct method, and removals, if necessary, repeated once a month.—Mr. STEWARD also recommended this method and considered that the difficult age was about 2 years. By the age of 9 the tendency to recur had diminished.—Mr. C. W. M. HOPE supported this view, though the resulting œdema sometimes led to a necessity for intubation.—Dr. POWELL mentioned that tracheotomy alone cured some cases.—Mr. F. A. ROSE had used sulphate of magnesia without improvement.—Dr. HILL saw such cases every fortnight.—Dr. DUNDAS GRANT removed the growths as they appeared and rubbed in alcohol and salicylic acid into the base.—The PRESIDENT mentioned a case of his which sprouted with papillomata even in the tracheotomy wound. This patient had undergone 43 operations and was seen every two or three months.

Dr. HILL then took the chair.

Dr. PETERS showed a case of Soft Bony Growth of the Antrum in a girl aged 14 years. It was opaque to trans-illumination, and the walls, except the palatal, bulged slightly. An artificial antrum had been scooped out of the solid mass nine months ago and the condition was stationary.—Dr. W. H. KELSON referred to similar cases in which the condition was bilateral.—Mr. W. G. HOWARTH inquired as to the translucency.—Mr. F. H. WESTMACOTT had experienced such cases which were due to a hyperplasia instead of vacuolation of the superior maxilla; he advised gouging out of all the soft material contained in the bone, and considered the prognosis in a case so treated to be good.

Mr. HOPE exhibited a case of Unusual Form of Syphilitic Laryngitis which had occurred during residence in Norway. The uvula, arytenoids, and superior ventricular bands were occupied by white solid swellings. The palate was not anæsthetic, but healed scars were present. Wassermann's reaction was positive, and 0·6 grm. of salvarsan was given with marked reaction, and subsequent local improvement. Another similar intravenous injection was followed by another reaction.—Dr. LIEVEN (Aix) considered that in tertiary syphilis, owing to the diminished number of spirochetæ, a dose of 0·5 grm. was the maximum; according to the size of the patient 0·3 grm. might be the correct dose. These reactions were dangerous and had probably caused the death of many patients. In one series of early cases, in which there was no glandular enlargement, Wassermann's reaction became negative in 5 per cent., but this was rarely the case. The relapses of secondary cases treated by the salvarsan method were uncommon; he considered that only a few of the fatal cases had been published.

Dr. JOBSON HORNE showed a case of Dysphagia with pain running up into the right ear lasting one month. The tongue was protruded to the right side, and there was a fulness at the base of the tongue. A course of potassium iodide resulted in cure of the condition, which was probably due to gumma at the base of the tongue.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Adenomyoma of Recto-uterine and Recto-vaginal Septa.—The Lighting of Continental Operating Theatres.—Foreign Bodies Removed from the Abdomen.

A MEETING of this section was held on Jan. 2nd, Dr. AMAND ROUTH, the President, being in the chair.

Dr. CUTHBERT LOCKYER read a paper on Adenomyoma of the Recto-uterine and Recto-vaginal Septa, in which he first remarked on the rarity of new growth arising in the connective tissue space intervening between the rectum on the one hand and the uterus and vagina on the other; he had been unable to find any such case recorded in the 49 volumes of Transactions of the Obstetrical Society of London. He described in detail a case which had come under his own observation. The patient was a sterile married woman aged 35; for the previous 12 months menstruation had been excessive; there was a good deal of pain in the rectum, worse at night, and latterly the defæcation had become difficult. There had been no bleeding from the bowel. On examination, a hard mass was felt in the posterior fornix, which was attached to the supravaginal cervix and projected into the lumen of the rectum, the rectal mucous membrane covering it being intact. The vaginal cervix was normal. On laparotomy being performed the body of the uterus and the appendages were found to be normal, there was no cellular infiltration, and the growth, which was below the peritoneal reflection, was firmly fixed to both rectum and uterus. The ureters were first dissected out, the left one being firmly incorporated with the growth; the uterine arteries were then tied, and the parametric tissues divided as far out as possible. The bladder was next separated, and the anterior vaginal wall divided. Then the rectum was divided between clamps above the growth, freed as low down as possible and again divided, together with the posterior vaginal wall below the growth. The lower end of the rectum was closed, and the upper end fixed in a separate opening in the left iliac region. Suprapubic and vaginal drainage was employed. The patient was making a good recovery. On microscopical examination the growth was seen to consist of dense fibro-muscular tissue, in which were sparsely scattered simple gland tubules surrounded by cellular tissue similar to that found around the tubules in an adenomyoma of the uterus. Histologically, the growth was comparatively benign. Dr. Lockyer suggested that the growth might have originated in some vestigial remains of the Wolffian duct.

An epidiascopic demonstration on the Lighting of Continental Operating Theatres was given by Dr. MACNAUGHTON JONES; and short communications upon cases in which a foreign body was removed from the abdomen by laparotomy were read by Dr. H. RUSSELL ANDREWS and Dr. C. F. BLACKER.

ELECTRO-THERAPEUTICAL SECTION.

The Use of Condenser Discharges in Electrical Testing.

A MEETING of this section was held on Jan. 17th, Dr. REGINALD MORTON, the President, being in the chair.

Dr. H. LEWIS JONES read a paper entitled "The Use of Condenser Discharges in Electrical Testing." He claimed for the condenser method advantages which were destined to render obsolete the present method of testing by induction coil and continuous current discharges. The points in favour of the means now described were: greater rapidity, more precision, it gave greater information, and was far less painful to the person tested. A condenser of known capacity was charged to a constant voltage and was then discharged through a muscle. The electrodes were applied to the motor points in the usual way, or, when the longitudinal reaction was being ascertained, to the distal tendon. The production or non-production of a contraction was all that was looked for; no need for judging whether it was sluggish or not. He proceeded to describe the character of the wave of discharge, and said it was easy to keep the charging voltage constant, as well as the resistance of the patient, because for these brief discharges there was no polarisation. He referred appreciatively to the work of Dubois, of Berne. If to healthy muscles a series of gradually increasing condenser discharges were used, the contractions all appeared very much alike, except that the larger capacities produced stronger muscular contractions; but if the same were done to damaged muscles they did not respond to the smallest capacities, but would to larger capacities. Therefore the process of testing with condensers consisted in ascertaining the magnitude of the least capacity required to produce a visible contraction in a given muscle. The electrical testing which had hitherto been used was based upon the interrogation of the muscular contractility by applying to it the short waves of the induction coil and the long waves of the closure of the continuous current. The tester had not known the wave length of either. Dr. Lewis Jones recommended the use of the metronome in all kinds of electrical testing; it gave an audible signal to the operator which told him when the muscular contraction should appear. A range of 12 capacities was sufficient to commence with, and they were arranged in series. The smallest condenser he used was 0·05 micro-farad, and the voltage he had chosen was 100, though other voltages could be employed. He believed it would supersede the older method of testing, and would probably bring out some new points of diagnostic value not at present suspected; it might also

show some discrepancies from what they regarded as the settled order of muscular excitability in disease.

Dr. E. P. CUMBERBATCH gave details of the testing of a number of cases by the new method, and bore out the points established in Dr. Lewis Jones's paper.

Dr. R. S. WOODS (London Hospital) expressed the view that Dr. Lewis Jones's method would revolutionise muscle testing. It not only made more definite the line between normal and abnormal muscle, but made possible the division of muscles formerly classed as abnormal into a graduated series.

Dr. C. F. BAILEY (Brighton) described the usefulness of the method to indicate the rate of recovery in his own person.

The PRESIDENT offered his congratulations to Dr. Lewis Jones for the work he had done on this important subject. In the earlier days, when testing by condenser discharges was in the air, it was so hedged about by logarithms and complex formulæ that the ordinary physician was shy of employing it; therefore the greatest credit was due to Dr. Lewis Jones for the clever way in which he had rendered it practicable. The time seemed now at hand when the degree of response of muscles could be definitely graded, perhaps numbered, to the great benefit of medicine generally. Dr. Lewis Jones's method of increasing the wave length of the discharge was particularly ingenious.

Dr. LEWIS JONES replied, and he was heartily thanked by the section.

MEDICAL SOCIETY OF LONDON.

The Rise and Possibilities of the General Practitioner-Surgeon.—The Treatment of Recent Injuries by Massage.

A MEETING of this society was held on Jan. 13th, Sir W. WATSON CHEYNE, the President, being in the chair.

Mr. T. NORTH read a paper on the Rise and Possibilities of the General Practitioner-Surgeon. He said that the object of the paper was to try to show the possibilities of operative surgery in general practice. He thought that they should see in the future the rise of men in general practice willing and anxious to do more than treat indigestion and coughs, who would not send every patient who had something just outside the ordinary run of diseases to the consultant or the hospital. In operative surgery in general practice he thought there was great scope for the spread of this movement. Patients who required operative treatment might be divided into three classes. First, the rich, who could afford whatever might be necessary in treatment. They would remain as before, going to those surgeons whom they knew or had heard of as being pre-eminent in the class of operation which they might require. At the other extreme there were the very poor, who would continue to receive treatment in the future, as in the past, from the hospitals. Between these two, and merging into each, not sharply defined, was a class who could afford moderate fees, or at any rate some fee for surgical treatment, and these in most places had not been able to find anyone willing to operate for fees within their reach, or, if willing, capable of doing it. He thought that this condition of affairs would soon pass, and that they would shortly find in most districts some man or men capable and willing to operate in all cases at reasonable fees. Up to the present in most cases these patients had gone to the hospitals, generally sent by their medical attendant and paying nothing. There was less trouble in many operations in looking after the patient, less time taken up in the operation itself than in dealing with many of the diseases in general practice, and the results were vastly more interesting and led to more increase of practice. When one had got into the way of operating in private the experience gained soon made for simplification of preparation and other details. As an example he mentioned an operation he had performed recently—a subtotal hysterectomy for a fibroid weighing 4½ lb., the appendix being removed at the same time. The operation itself took 50 minutes to perform, the preparation for it, say, an hour and a half. On the day of the operation he saw the patient twice; since then once a day, omitting Sunday. The wound would be dressed in a day or two, and then the work was practically done. It was well to compare this with a difficult confinement both as regards the amount of work required and the compensation for one's efforts. The question at once arose as to what extent operative procedures should be carried—where should the line be drawn as to their magnitude? This question could only be answered by the individual who undertook them and would vary with the amount of his experience and the number he got. Many of the major operations did not require any very great manipulative skill, and for the man who had held some good resident appointments after qualification, and who had not let himself rust, he did not see why there should be any limit if one excepted the more specialised operations. With the spread of cottage hospitals throughout the country and suburbs, the work of the great town hospitals ought to be freed to a great extent from those cases which could equally well be done in these smaller institutions if not in the patients' homes. The advantages of this decentralisation of work would be numerous. In the first place it would free the larger hospitals of many operative cases, it would do away with much of the uninteresting spade work of the operative consulting surgeon, it would give the general practitioner-surgeon more material, and it would relieve to some extent the overcrowding and expense of working hospitals in towns. The advantage to the consulting surgeon would be very great, as it would leave him more time to the consideration and development of original thought and procedure, which to-day with the stress of work he had to undertake must be very difficult. Another advantage to the surgeon attached to a large hospital would be that he could become a pure consultant, brought in to advise, give his opinion as to whether an operation was necessary or desirable, stiffen the opinion of the general practitioner-surgeon who called him in, and cement the confidence of the patient and his friends. Financially, he thought the surgeon would gain, as in the class of patient he was speaking of they could not pay the surgeon's operating fee, and consultations would be more frequently sought if the patients remained under the practitioner's care. As an instance he gave an experience which occurred to him last year. He had operated upon a child for the removal of tonsils and adenoids, and a few days after the throat became diphtheritic with laryngeal obstruction, for which he advised immediate tracheotomy. The parents of the child asked for a consultant to confirm his opinion that the operation was necessary, but not to operate. The consultant did, and stood by while he (Mr. North) opened the trachea. The child recovered. This was to his mind the ideal of consulting work. When operating in private houses there were difficulties to be overcome which did not arise in a well-equipped theatre. Attention to the minutest detail was much more essential, as one could not rely on being able to find a necessary instrument in the cupboard in the next room. There were few houses where one could not get a suitable room and, with the exception of the operating table, everything one required. One must have a portable operating table. The disadvantages of the surroundings were in many cases amply compensated for by not having to move the patient, and thus doing away with the increased nervous dread and the risk of moving in perhaps a very unsuitable vehicle. This in acute abdominal cases was a matter of very considerable importance. Nursing presented no difficulties except as regards expense, and this with a little management could be reduced to a minimum. For the operator himself, in addition to the greater attention to details mentioned above, there was another point of difference to that obtaining in operating in a hospital. He had to rely on the smallest amount of assistance. This was quite an advantage to the patient, and there were few operations which could not be performed with one assistant besides the anæsthetist. As regarded the operation itself there were a few points which were of interest in respect to private work. For the man who had come straight from hospital an operation in private must seem almost an impossibility. Accustomed to seeing the pomp and circumstance of a modern well-equipped theatre, surrounded by all the surgical luxuries of the age, he must feel that these things were essential, and would scorn to see amongst other things a kitchen pot or a fish-kettle taking the place of the high pressure steriliser. They served, however, very effectually at a pinch. Another criticism he would like to make with all humility was in regard to the teaching of aseptic surgery in hospitals to the more

or less exclusion of antiseptics. For a beginner, at any rate, or one operating under circumstances perhaps of hurry or in surroundings which were not altogether favourable, there was a liability of having aseptic precautions break down and infection take place which would not have happened if a mixed system had been adopted. Moreover, the initial expense of the equipment for aseptic work was much greater, entailing a large steriliser, containers, &c., as one could not depend on getting ready sterilised dressings, swabs, &c., in a hurry. Although sepsis was much less likely to occur when operating in private than in hospitals (and he spoke from experience in both), he did not think that for a beginner aseptic work should be attempted. The amount of irritation produced by the antiseptic was amply compensated for by the increased security. The preparation of the skin by the iodine method was a great saving of trouble, and after having now used it in a very considerable number of cases he had not yet found it fail. As an additional safeguard for disinfecting the operator's hands before putting on the gloves he regularly used it. It did not irritate the skin and readily washed off. The anæsthetic was at first a trouble, but when one had been operating for some time one found a man on whom one could rely, which freed one from need of attention to anything except the operation. Open ether was the anæsthetic which he now used for all ages. In abdominal work the peacefulness it gave was equal to chloroform without its risks, and it did not give rise in bloody operations, like Halsted's for carcinoma of the breast, to the increased hæmorrhage which the closed method did. In infants it was admirable, and did away with the anxiety which one always had with chloroform. One of the advantages, or at times disadvantages, the general practitioner-surgeon had over the consulting-surgeon was that he saw the result of his work throughout, he had the patient with him before and after, knew his history and peculiarities better than one could possibly do who saw him perhaps only at the time of the operation, and he also had the advantage of observing the after-results not only of his own but other's work. This was very helpful in teaching one to avoid some mistakes. To give an example, he saw a patient of his operated upon at a large hospital for movable kidney by a surgeon of world-wide repute. In the course of the operation he exposed the last dorsal nerve, and turning to the gallery explained to the students that he always cut an inch out of it, as it very often gave rise to pain later. A couple of months after the operation the patient came to him (Mr. North) complaining that her belly behaved in a curious way when she coughed or strained. On examining her and getting her to give a series of coughs the right side of the abdomen gradually distended like a football bladder, slowly returning to normal when the coughing ceased. The kidney was as loose as, or looser than, before the fixation. In the realm of the special surgeon one often saw results equally illuminating. The opinions expressed in this paper were based on an experience of between 700 and 800 operations performed in general practice of all kinds, from abdominal sections for hysterectomy, ovariotomy, colotomy, appendicectomy, salpingectomy, uterine and kidney fixations; amputations of all kinds, most of the gynæcological operations; nephrolithotomy, lithotomy, prostatectomy, adenoids and tonsils, submucous resections of the septum nasi, tracheotomy, &c. It might at once be said that it was easy to do and write about these things, but what were the results? The mortality for the abdominal sections was 4–6 per cent., and for the whole series 2 per cent. Of the total mortality 35 per cent. was in patients of 60 or over, and 28 per cent. in patients under five years. The most convincing result, however, was that his surgical work had gradually and progressively increased both in quantity and quality. What had been said as applying to operative surgery might equally well be extended to the other branches of surgical and medical work. In conclusion, might he say that in his opinion there was great scope for any man who undertook in general practice to pass outside the ordinary trammels of custom—for one who having made up his mind clearly and definitely as to a right course of surgical treatment for his patient, fearlessly to pursue that course if he felt competent, regardless of what people might say if he had, as everyone must have, at times a failure.

Dr. J. B. MENNELL read a paper on the Treatment of Recent Injuries by Massage.

LIVERPOOL MEDICAL INSTITUTION.

Cavernous Sinus Thrombosis.—Suture of Crucial Ligaments of Knee.—Congenital Anomalies connected with Umbilical Structures.—Annual Meeting.

A MEETING of this society was held on Jan. 9th, Mr. ROBERT JONES, the President, being in the chair.

Mr. C. A. ADAIR DIGHTON read a short paper on Cavernous Sinus Thrombosis, with a report of two cases. He alluded to the anatomy of the cavernous sinuses and the chief symptoms that had been found to characterise thrombosis. His first case was that of a girl, aged 13, who had had a mastoid abscess on the right side. After the radical operation on the mastoid the girl did well for a week. Then her temperature ran up, she had rigors, with exophthalmos, drooping of the eyelids with haziness of the cornea, and optic neuritis. The right internal jugular vein was ligatured close to the clavicle and dissected up to the mastoid. The lateral sinus was exposed, curetted, and a current of fluid passed through it. Polyvalent serum was administered. She made a good recovery after showing signs of septic synovitis in several joints. The second case was that of a boy, aged 6. In this case the trouble arose from the nasal region, the right orbit being affected. The superior bony wall of the orbit was removed, the frontal lobe elevated, the cavernous sinus curetted, and a rubber drain introduced. The child died from acute meningitis.

Mr. R. E. KELLY showed a case in which he had Sutured the Crucial Ligaments of the Right Knee-joint in a carter, aged 33 years, with excellent results. The man had been kicked on the outer side of the knee while the joint was extended, a portion of the skin on the inner side being caught as a fold between the ends of the tibia and femur. There was extreme mobility of the joint. It could be dislocated backwards and replaced easily. The leg was put up in a Thomas's knee-splint for five days. Then Mr. Kelly opened the joint by a long horizontal incision. The crucial ligaments and the internal lateral ligament were sutured with 30-day catgut. The wound was closed and the leg kept at rest on a Thomas's splint for three months.—The PRESIDENT congratulated Mr. Kelly on the results and said he had seen several cases where this injury had occurred recover without operation if fixed on a splint at once.—Mr. W. RUSHTON PARKER also thought that, though the result justified the operation in this case, in most cases immediate fixation was the most important point in treatment.—Mr. G. C. E. SIMPSON related a case where he had started treatment four months after the injury, with the result that after six months of splint treatment there was still a flail joint.

Mr. SIMPSON read a paper on Congenital Anomalies connected with Umbilical Structures. These included abnormalities due to relics of the vitelline duct, relics of the allantois, and faulty closure of the lateral folds of the embryo. Three recent cases of laparotomy for congenital exomphalos were related. In one case the major part of the liver was included in the sac. The other two cases were successful. In two cases of ectopia the trigone of the bladder had been implanted into the sigmoid portion of the large intestine. The one patient lived for four months, dying then from pyelitis; the other died from the shock of the operation. The anomalies of the urachus were discussed and a case of urachal umbilical polypus was described. Cases of umbilical polypi due to abnormalities of the vitelline duct were considered. Four had been reated with success. The results of a Meckel's diverticulum were illustrated in various forms. The paper was illustrated by slides and specimens.

At the annual meeting held on Jan. 16th the following office-bearers and members of Council were elected. Those marked with an asterisk did not hold the same office last year:—President, Robert Jones; Vice-Presidents, *Thomas Bushby, *W. B. Warrington, C. J. Macalister, and J. Lloyd Roberts; Treasurer, R. J. Hamilton; General Secretary, *Frank Hugh Barendt; Secretary of Ordinary Meetings, Alexander Stookes; Secretary of Pathological Meetings, W. Blair Bell; Librarian, *Nathan Raw; Editor of the Journal, John Hay; Council, T. R. Bradshaw, T. B. Grimsdale, Edward W. Hope, W. S. Henderson, N. Percy Marsh, C. E. Solomon, *R. E. Harcourt, *M. T. Stack, *A. W. Riddell, *D. Moore Alexander, *J. A. Howard, and *W. B. Bennett; Auditors, W. S. Henderson and *A. P. Hope Simpson.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

An Endemic Febrile Illness.—Bone and Joint Tuberculosis.

A MEETING of this society was held on Jan. 15th, Mr. J. M. COTTERILL, the President, being in the chair.

Dr. CHARLES MCNEIL and Dr. J. P. MCGOWAN communicated a paper on Endemic Febrile Illness, with Acutely Fatal Cases, occurring in a Boys' Industrial School, in which they described outbreaks of peculiar illness in an industrial school near Edinburgh that they had investigated. These had occurred over a period of ten years, and while prevailing in the colder seasons had also happened in summer. Evidence of contagion of the disease from boy to boy was wanting, and the officials of the schools had shown a complete immunity from the attacks. The illnesses assumed three clinical types: acute cases terminating fatally in a few hours, of which 20 cases were collected in all; irregular and apparently lobular pneumonia—total 51 cases; simple febrile illness—total 175 cases. The evidence that these types were variations of a single morbid entity—an irregular pneumonia—was that the three types occurred together in groups; that in their manner of onset and clinical course similar symptoms were shown; that cough and spit, though frequently absent, were present in a few cases of all three types; and that the sputum, when examined, always showed pneumococci. Post-mortem evidence, by showing either acute congestion or irregular consolidation of the lungs, confirmed this suggestion of irregular pneumonia. In explanation of the unusual prevalence and the irregular types of pneumonia in the school, the authors advanced the hypothesis that this might be due to an abnormal constitution or diathesis pre-existent in the boys. Some proof of this was found at certain of the necropsies in the enlargement of the thymus and other lymphoid tissues of the alimentary tract—the appearances of status lymphaticus. The hypothesis, therefore, was that some morbid diathesis had been present on a large scale and over a long period in the school, and that in the acutely fatal cases it corresponded to that of status lymphaticus. They did not attempt any explanation of the real nature of this morbid diathesis, nor were they clear as to what caused it. The probability lay in some defective conditions of environment, and at the school the boys, in their opinion, were unduly exposed to cold and were also overcrowded.—Dr. JOHN GREEN said that he had charge of the institution when the first fatal case occurred. He noted that if the temperature of the patient went above 102° F. death invariably followed. The only means they had found of preventing the epidemic was to put the boys out under canvas. Only strong boys succumbed, and two of the strongest boys who were employed in carrying out the beds to the tents succumbed the next day. Puny boys always recovered.—Mr. HENRY WADE thought that the boys died from a pneumococcus septicæmia. He had isolated such organisms from the brain, epicardium, and blood of fatal cases. He thought that the inmates of such homes resembled wild animals in the free, open life which they had led previous to their reception in the institution, and like wild animals in confinement they frequently died suddenly. He did not think there was much evidence of status lymphaticus in the cases.—Professor H. HARVEY LITTLEJOHN said that status lymphaticus was not a cause of death, but that it led to death very easily from other causes. In his own experience he often found this condition present, though it might not be possible to find the real cause of death. In infants, however, he was of opinion that status lymphaticus produced death. An enlarged thymus gland pressed on important organs, and thus the heart might be injuriously compressed. This might account for the statements which mothers frequently made as to the child turning blue in the face. Individuals with status lymphaticus always appeared well nourished, but this indicated not a real but only an apparent strength. He was of opinion that in such institutions generally they did not find that robust state of health which they might expect to be present in the inmates.

Dr. ALEXANDER GOODALL and Dr. R. W. JOHNSTONE also took part in the discussion.—Dr. MCNEIL, in his reply, stated that there were about 300 of such industrial schools throughout the country, all maintaining the same class of boys, yet only a few of such schools showed these epidemics.

Mr. JOHN FRASER read a paper on Bone and Joint Tuberculosis, in which he summarised his remarks under (*a*) etiology, (*b*) pathology, and (*c*) treatment. (*a*) *Etiology:* The essential etiological factor, he said, was the lodgment of the tubercle bacillus, but this was intimately related with two secondary considerations of even greater importance, (1) the type of the causative bacillus; and (2) the route by which it reached its site of development. 1. As to the type of bacillus, from the point of view of pathology, and more especially from the clinical aspect, the human and bovine types of tubercle bacilli claimed attention. The routes by which the bovine bacillus attacked the human body might be limited to one, the alimentary tract. This tract was infected by ingestion of infected material, chiefly milk; therefore the question of milk infection was at the bottom of the seeking after knowledge in regard to this type of bacillus in bone and joint tubercle. Five possible tests to differentiate between human and bovine bacilli were recognised. (*a*) The rapidity of growth upon mediums, Tubercle bacilli might be grown upon various media, a very suitable one being inspissated egg. In comparing cultures of the human and bovine organisms the human bacillus would have grown at the end of a common period more luxuriantly and profusely than the bovine. But this was by no means an absolute test. In many cases the organism grew neither profusely nor scantily. (*b*) The second test was based upon another peculiarity in growth. Glycerine had a depressing effect upon the growth of the bovine bacillus, but stimulated the development of the human bacillus. If a doubtful bacillus was grown on a medium of egg and glycerine, a profuse growth meant the human type, a scanty growth or none the bovine. But this test also was by no means absolute, for a similar reason as before. (*c*) The morphological character of groups of tubercle bacilli, long bacilli being considered to be human, short squat bacilli bovine. For all practical purposes this test was useless, but to one morphological characteristic some degree of distinctive quality must be attributed—viz., the characteristic of nodule staining. Certain bacilli when stained with a modification of Erain's stain (Meule's method) showed dark nodules resembling spores. Such bacilli were almost certainly human, though all bacilli which did not show them were not necessarily bovine. (*d*) In Theobald Smith's test a medium was used consisting of bouillon and glycerine of a known slight acidity, upon which the bacilli were grown. During growth certain changes became apparent in the acidity of the medium. Progressive increase in acidity was taken to indicate the human type; diminished acidity, or even alkalinity, the bovine. (*e*) *The inoculation test* was one about which there was no doubt; its execution was easy; the result absolute. It depended on the susceptibility of the bovine species to infection with the bovine bacillus. For economic reasons rabbits were more suitable than calves. A full-grown rabbit was injected intravenously with a small known quantity (0·01 mgm.) of tubercle bacilli. The rabbit might show no ill effects, its weight might increase or remain constant, and if it was killed, say, six months later, the only evidence of tubercle found would be a fine epithelial pellicle in the lungs. Or the inoculation might be followed by rapid loss in weight, increasing cachexia, and death within six weeks, post-mortem examination then showing a generalised and rapid tuberculosis. In a series of nearly 100 cases thus examined the author had found that 62 per cent. owed their origin to the bovine bacillus. These cases have been drawn entirely from Edinburgh and its neighbourhood, and gave serious food for thought, for they could mean only one thing, a milk supplying infection to a highly dangerous degree. With regard to cases due to the human bacillus, in every case an inquiry was instituted into the question of tuberculosis among other members of the family, and it was found that in 71 per cent. there was a history of tuberculosis—usually pulmonary—in the family. The practical lesson to be drawn was the importance of isolating pulmonary tuberculosis. 2. Routes of infection. Bones and joints were rarely the site of the primary

development of tubercle; when attacked it was secondary to some more distant infection, the vehicle of infection being the blood or the lymph stream. There had been much controversy whether the bone or the joint was the first to become infected. Experiment would appear to prove, first, that it was difficult, often impossible, to infect the cavity of a healthy bone with tubercle, the resistance of the marrow being too great, and the bacilli becoming almost invariably destroyed. Secondly, that the joints were readily infected through the blood stream, the anastomosis of the circulus vasculosus in the fringes of the synovial membrane being more exactly the situation in which the disease begins. Clinically, an osseous tubercle did occur, and the explanation was that while tubercle bacilli could not develop in a healthy marrow, when the marrow was altered disease might arise. The change in the marrow was a gelatinous degeneration—a disappearance of the true marrow cells and a proliferation of the fibro-myxomatous groundwork. In a marrow so altered tuberculous disease readily developed. This change was the result of an endarteritis and thickening of the vessels, nutrient or metaphysial, and a resulting interference with nutrition, affecting respectively the diaphysis or the epiphysis. The vascular thickening was due to the circulation of the tuberculous toxin. The thickening of the nutrient artery might be secondary to tubercle anywhere, that of the metaphysial vessels usually arose from a focus of tubercle in the neighbouring synovial membrane. Our experimental knowledge, therefore, of the etiology of bone tubercle indicated that synovial tubercle was readily produced and the synovial membrane was infected by the blood stream. Healthy bone could not be infected with tubercle, its marrow must first undergo a gelatinous or fibro-myxomatous degeneration, such as was occasioned by tuberculous endarteritis of the vessels, nutrient or metaphysial, supplying the bone. (*b*) *Pathology.*—The disease might begin in the centre of the diaphysis or at the articular ends, in the epiphysis or at the metaphysis, depending on the site of the reflection of the synovial membrane—i.e., whether the reflection lay only in relation to the epiphysis or extended beyond it to the metaphysis. *Changes resulting from the lodgment of the bacilli.*—The bacilli were probably originally deposited by a small extravasation of blood from a thin-walled vessel such as occurs in a slight sprain. There the bacilli developed, forming a small tuberculous follicle, with giant cells, epithelioid cells, and lymphocytes. It was important to emphasise that the primary lesion was a true follicle developing in the marrow. As the follicle enlarged others appeared around it, forming a mass of appreciable size, possibly apparent to the naked eye as a tiny white spot in the red marrow. Coincidently, caseation appeared at the centre, an attempt at fibrosis and localisation at the periphery, of the follicle. If the central change preponderated the caseation extended rapidly throughout the marrow and "infiltrating tubercle" resulted; if the peripheral change, the disease remained localised, causing "encysted tubercle." But independent of the growth of the follicle coincident changes appeared in (1) the marrow, (2) the bone lamellæ, (3) the periosteum, and (4) the blood-vessels, and from these changes many of the clinical appearances gained their characteristic features. The author proceeded to describe these changes at some length. The marrow changes were a cellular reaction followed by a limiting fibrosis. The lamellar changes consisted of absorption by osteoclasts or of surrounding hyperostosis by osteoblasts at a distance. The periosteal changes were a subperiosteal limiting deposit of light cancellous bone. The vascular changes were of the nature of endarteritis obliterans. The best classification of the disease designated the various types by the most characteristic changes, namely (*a*) *an encysted type*, in which the disease remained localised; (*b*) *an infiltrating type*, in which it tended rapidly to spread throughout the lamellæ; (*c*) *a hypertrophic type*, in which the distinguishing feature was an overgrowth of bone; (*d*) *an atrophic type*, in which a rarefactive process was most evident. In regard to treatment, there were two special points the author wished to bring out, as they were more or less original. First, that the usual conservative treatment is absolute rest of the affected part. Of the many materials used to ensure rest the ideal material must be light, well-fitting, comfortable, and yet rigid. Such a material was to be found in celloidin, or pyroxylin, or celluloid. Batten (THE LANCET, July 13th, 1912) recommended celluloid splints in the treatment of infantile paralysis; they could be equally well used in bone or joint tubercle, except in the hip, shoulder, or spine, where they were precluded by the size and extent. A special advantage was that they could be taken off and the part massaged, a practice that had not hitherto received sufficient attention. Secondly, the employment of a type of autogenous vaccine. Bone tubercle was arrested and ultimately cured by a surrounding fibrosis, which depended on the action of a specific element contained in the tissues, which he believed would be present if the vaccine were prepared as follows. A portion of the actual diseased tissue was ground up; the supernatant fluid was centrifuged and filtered, sterilised by heating to a temperature of 50° C. for one hour, and standardised by measurement (5 c.c., &c.). Such a vaccine contained not only the toxin of the bacilli and the other bodies usually present, but also the special fibrous-tissue-forming element which he believed to be so important. Clinically, its use had given excellent results.—Mr. HAROLD J. STILES said that infection of bone occurred very easily in children. At first one got a toxæmia of tubercle from some other part of the body—e.g., glands. This toxæmia produced endarteritis. Tubercle began very rarely in the epiphysis itself; this was almost invariably secondary to joint disease. Diaphysial tuberculosis was most frequent. Was it infected secondarily to the joint or was it primary? He said that Mr. Fraser had demonstrated and established the fact that 62 per cent. of bone and joint tubercle was of bovine origin. There was no question as to the human origin. Another worker in Edinburgh (Dr. K. Mitchell) had shown that 90 per cent. of cervical gland tuberculosis was of bovine origin, and these infections were due to tuberculous milk, so that legislation as to the milk-supply was necessary. In Edinburgh, with its more than 2000 cows, one inspector was required to do the duties, while in the country there was no inspection whatever. Even when a cow was found with a tuberculous udder there was no power to order its slaughter. There was more tuberculosis in Scotland than in England and Ireland because more milk was drunk in this country. Ayrshire cows were most frequently employed as milk-givers because of their large yield, and in that breed tuberculosis was most prevalent.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Jan. 17th, Dr. J. Dobson, the President, being in the chair.—Mr. Alexander Sharp showed a number of skiagrams of the Mastoid Area. A bismuth plug had been placed in the external auditory meatus before sending the patient to the radiographer. A very distinct outline of the canal appeared on the negative. This formed a useful guide to the mastoid antrum, lateral sinus, &c., and simplified the interpretation of the plate. In some cases it might be more useful to smear the drum head only with the bismuth paste.—Mr. G. C. Hayes showed a case in which there had been a five months' history of œsophageal obstruction. A diagnosis of œsophageal epithelioma was made, and this was confirmed by the œsophagoscope. An operation had been performed by Mr. J. F. Dobson, and the growth, which was an extensive one, successfully removed, the upper end of the cut œsophagus being sutured to the skin. The specimen was also shown.—Mr. Dobson also exhibited some cases showing the advantage of "block" dissection in the removal of cervical glands for malignant disease.—Cases were also shown by Dr. C. Wilfred Vining, Dr. A. Bronner, Mr. Walter Thompson, Mr. J. Basil Hall, Mr. H. Littlewood, Dr. W. H. Maxwell Telling, Dr. T. Wardrop Griffith, and Mr. Carlton Oldfield.—A paper was read by Mr. Oldfield on Obstetric Surgery: its Uses and Limitations. He discussed the treatment of eclampsia, comparing the surgical methods of simple induction of labour, and of vaginal and abdominal Cæsarean section, with expectant and therapeutic measures. Pernicious vomiting of pregnancy he regarded as a neurosis, and advocated treatment by full feeding and suggestion. As a rule, surgical interference was not indicated in this condition, nor was it in fibroid tumours or in pyelitis complicating pregnancy. The necessity in some cases for cranioclasty and decapitation was deplored. The need for these could usually be avoided by

examination during pregnancy, when Cæsarean section would be indicated.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Jan. 8th, Dr. Walter C. Swayne, the President, being in the chair.—Dr. J. A. Nixon gave a demonstration on the Technique of the Intravenous Administration of Neo-salvarsan. He stated that it was necessary in syphilis to give doses at intervals of a week or less until Wassermann's reaction had become negative, and remained so for at least four weeks, four or five doses being usually required.—Dr. C. W. J. Brasher, in a paper on Intermittent Swelling of the Parotid Gland, related the case of an adult female who had had attacks of acute parotid swelling at intervals for more than ten years. A vaccine of the micrococcus catarrhalis grown from the interior of Stenson's duct gave a year of freedom from attacks, but the condition had since recurred.—Dr. J. O. Symes said that he had seen a boy with bilateral parotid swelling occurring every evening for some weeks following an attack of mumps.—Dr. Carey Coombs said that he had seen a similar condition affecting the submaxillary glands.—Dr. R. S. S. Statham showed a specimen of Primary Rupture of the Pregnant Uterus before Labour. When the patient, who was eight months pregnant, was first seen she was thought to be a case of concealed accidental hæmorrhage, but a laparotomy revealed an extensive rupture of the uterus and the child free in the peritoneal cavity. She had been curetted a year previously for a septic abortion, and no other cause could be found.—Dr. F. H. Edgeworth related a case in which phosphaturia and oxaluria alternated, the latter condition being accompanied by renal colic and hæmaturia. The condition was cured by more complete mastication, the patient having previously bolted his food.—Dr. Brasher had also a case of oxaluria accompanied by hæmaturia and renal colic.

Reviews and Notices of Books.

X Ray Diagnosis and Treatment. By W. J. S. BYTHELL, B.A. Cantab., M.D. Vict., Honorary Physician to the Ancoats Hospital, Manchester; and A. E. BARCLAY, M.D. Cantab., M.R.C.S. Eng., Medical Officer to the Electrical and X Ray Departments, Manchester Royal Infirmary. With 118 illustrations. London: Hodder and Stoughton. 1912. Pp. 139. Price 15*s*.

OF the many books on X ray work we have had occasion to peruse we do not remember one that has so many pleasing features as that now under consideration. It would seem to have been the authors' constant care to say no more than it was necessary to say on any particular point, and to say it in the most clear and concise way. As the book does not pretend to teach the technique of radiology, we are spared a hundred or more pages of material that can be usually found in any text-book of physics and in an instrument maker's catalogue. The authors have drawn upon a large experience of their own, and confine their observations to that almost entirely, and there is never any difficulty in ascertaining their views regarding debatable matters. Another good feature is formed by the illustrations. These are all from striking plates made by the authors, are well reproduced, and conveniently placed in groups at the end of each chapter. On the subject of fractures the limitations of the value of a screen examination are emphasised. In a large proportion of cases only a plate of good quality can make the situation clear, and nothing less than this is admissible when the question of readjustment of the fragments by operative procedure arises.

X ray diagnosis in connexion with diseases of the bones and joints is thoroughly well dealt with. The loss of opacity that accompanies most bone diseases—notably tuberculosis—is well shown in the excellent skiagrams that illustrate this chapter. Wisely, we think, a special chapter has been devoted to the examination of the bones and joints in children. In no branch of radiography is a greater experience necessary than in the interpretation of plates made during the growing period, whether for accident or disease. The authors have done much to help in clearing the difficulties that surround this important subject.

Turning to the section of internal medicine there is a very useful chapter on the examination of the thorax. It is pointed out that it is in the more obscure cases that the aid of the X ray is desired, especially in the earlier stages. Phthisis is, of course, the most common condition that requires every available aid to assist the diagnosis. Defective lighting up of dark or mottled areas, restricted movement of the diaphragm, enlarged bronchial glands near the root of the lungs, are among the important signs that can be made out only by this method, and they go far to determine the nature of the case under investigation. This chapter is a valuable one. Dr. Barclay's work on the examination of the stomach and intestines is well known both at home and abroad, and we are fortunate in having his ideas so clearly and concisely stated in the chapter on the examination of the abdomen. In a sound chapter on the urinary system, we note that the authors state that in the examination for stone the error need not exceed 1 per cent. The therapeutic applications of the X rays are referred to in one short chapter, and there is a brief appendix on X ray apparatus and technique.

This book is meant for medical men generally, who wish to know how far the X rays may be of assistance in any case that appears likely to be benefited thereby. They need have no fear of being inundated with a lot of technical detail of no special interest to themselves. They will find every page interesting and easy to understand, and so great is the importance of radiology in modern medicine and surgery that many of our readers must be seeking just this work.

Practical Anatomy: an Exposition of the Facts of Gross Anatomy from the Topographical Standpoint and a Guide to the Dissection of the Human Body. By JOHN C. HEISLER, M.D., Professor of Anatomy in the Medico-Chirurgical College of Philadelphia. With 366 illustrations, of which 225 are coloured. London and Philadelphia: J. B. Lippincott Company. 1912. Pp. 790. Price 21*s*. net.

THIS work gives in one volume a full and fully illustrated account of the dissection of the entire body. It is doubtful if it is the wisest policy to issue a dissecting manual in a single volume, for it is necessary that the one book should be in constant use in the dissecting-room throughout the whole course of practical anatomy. The illustrations are all by Mr. E. F. Faber, and some are already familiar as figures in Piersol's Anatomy; some, however, are drawn especially for this volume. Mr. Faber's work is admirable, but in some instances the colour printing has hardly done him justice, for many of the figures show a bad overlap of colour. It would seem a mistake to colour the vas in Fig. 300 exactly like the veins, and so give the appearance of an anastomosis between the two structures. Some slight criticism must also be made concerning the index lines to the illustrations; Fig. 41, "ant. circumflex vein," is an instance. It is possible that individual copies vary somewhat, but in the one submitted for review this line appears to end on the brachial artery, and no vein seems to be indicated at this spot.

It was rather a surprise to us to see that a new work published in America did not embrace the B.N.A. terminology in its entirety, but the author's reasons for this are given clearly in his preface, and with these reasons we are in perfect accord. One piece of terminology has attracted our attention. The prominence over the joint between the

manubrium and gladiolus of the sternum is named throughout as the angle of Lewis. The best warranted eponymous term for this angle seems to be the angulus Ludovici, which is usually anglicised as the angle of Louis, or occasionally by confusion the angle of Ludwig. We do not know to what anatomist named Lewis the author ascribes this term.

The book is well and carefully written, and many classical mistakes are avoided; we think, however, that the popularity of the book will be handicapped by the fact that several of the old strained positions are still retained for dissecting. With formalin as our stock preservative, it has seemed useless to continue the lithotomy position which is here advocated; the damage done to the hardened tissues is too great a price to pay for the retention of what is after all merely a traditional piece of surgical anatomy.

Preventable Cancer. A Statistical Research by ROLLO RUSSELL. London, New York, Bombay, and Calcutta: Longmans, Green, and Co. 1912. Pp. 167. Price 4*s.* 6*d.* net.

THE subject of the cause of cancer has an immense fascination for many, both of the medical profession and others. Mr. Rollo Russell some time ago wrote a book on the "Reduction of Cancer," and in the present volume he has put together many facts bearing on the question of the cause of malignant disease, supporting his opinion by statistics, which he has collected from a very wide area. The statistics relate to the distribution of cancer geographically, to the increase of cancer during recent years, and to its occurrence in various occupations and trades. Mr. Russell has arrived at the following conclusions. Cancer shows a graduated increase from extreme rarity to great frequency, according to the habits of nations, races, and tribes. Apart from exceptional customs, it scarcely exists among peoples and in districts and countries where the diet is natural, cool, and frugal, without irritating or stimulant adjuncts. The use of water as the staple drink is of effect in immunity. The increase of recent years corresponds with the regular and very large increase in the consumption of stimulant meats and drinks, of hot foods and drinks, and with the increased consumption of adjuncts of many sorts, including unwholesome forms of sugar, pickles, drugs, and preservatives. The author has evidently taken a great deal of trouble in preparing this little book. He has succeeded in showing, what has been shown so often before, that local irritation is an important factor in the production of cancer.

Handbuch der Vergleichenden Physiologie. Von HANS WINTERSTEIN in Rostock. Lieferung 25. Band I. Zweite Hälfte. Bogen 11–20. Pp. 161–320. Price 5 marks.—Lieferung 26. Band III. Erste Hälfte. Bogen 11–20. Pp. 161–320. Price 5 marks.—Lieferung 27. Band III. Erste Hälfte. Bogen 21–30. Pp. 321–484. Price 5 marks.—Lieferung 28. Band IV. Bogen 53–61. Pp. 841–976. Price 5 marks. Jena: G. Fischer. 1912.

IN the 25th Lieferung the editor, Professor Winterstein, continues his account of the Physico-chemical Phenomena of Respiration, in which those who wish for data collected from all the available sources will find what they seek. The remainder of the text is devoted to the Mechanics and Innervation of Respiration, which is entrusted to E. Babák, of Prague. The author, however, deals only with the subject from protozoa to the holothurids, so that students of respiration in the higher groups must wait for the continuation of the author's compilation.

In the 26th Lieferung R. du Bois-Reymond continues his account of the Physiology of Movement (see THE LANCET, March 2nd, 1912, p. 587). It is particularly interesting, as the author brings together an immense number of facts which an investigator would not readily find. The latter half of this part is devoted to the Production of Noises and Tones, by O. Weiss. No wonder the author refers to the impossibility of including all the observations. He begins with noises and notes produced by the arthropoda, and then deals with similar phenomena amongst the vertebrata. When Professor Weiss finishes his subject, two pages are left, and on the first of these Professor Biedermann, of Jena, begins a masterly and exhaustive contribution on the Physiology of the Supporting and Skeletal Substances, which occupies the whole of the 27th part. Even at the end of this part the author still finds himself dealing with the protozoa. This may give some idea of the thoroughness and completeness aimed at by the author.

The whole of the 28th Lieferung is assigned to Hearing and the Sense of Equilibrium, by E. Mangold, of Freiburg i. Br., who gives an admirable account of a difficult subject, requiring on the part of the reader a wide knowledge especially of invertebrate zoology. We find much to commend in the grouping of the extraordinary range of facts which the author has accumulated, the largest number of which has reference to the invertebrates. These functions in vertebrates are treated less fully.

Surgery of Deformities of the Face. By JOHN B. ROBERTS, A.M., M.D., Professor of Surgery in the Philadelphia Polyclinic, Surgeon to the Methodist Hospital, &c. Illustrated with 273 figures. London: Baillière, Tindall, and Cox. 1912. Pp. 273. Price 12*s.* 6*d* net.

SOME 12 years ago, when Dr. J. B. Roberts was appointed by the College of Physicians of Philadelphia to deliver the Mutter lectures, he took as his subject the plastic surgery of the face, and this book had its origin in those lectures. Although several excellent treatises on plastic surgery have appeared, there is still a marked tendency to underrate this important branch of surgery. The author of this work has written a very useful guide to the treatment of the deformities of the face, whether they are congenital in origin or have resulted from injury or disease. He has introduced the subject by a careful study of the face, for the surgeon who would become skilled in the plastic surgery of the face must first of all know the minute details of the face on which expression depends. Unless attention is paid to these details a certain degree of failure is always liable to follow attempts to rectify a deformity. The general principles of plastic surgery are explained, and then in turn the author takes the various lesions of the face and shows how they may be treated. A chapter on cleft palate is included. We are inclined to speak favourably of a practical book.

Pathology of the Eye. By P. H. ADAMS, M.A., M.B., D.O. Oxon., F.R.C.S. Eng., Consulting Ophthalmic Surgeon to the Radcliffe Infirmary, Surgeon to Oxford Eye Hospital. London: Henry Frowde, Oxford University Press, and Hodder and Stoughton. 1912. Pp. 194. Price 5*s.* net.

THIS book is a bold attempt to compress an account of the pathology of the eye, including bacteriology and practical methods, into 188 small pages of large print, the bolder in that many of the pages are almost completely occupied by illustrations. It cannot be said that Mr. Adams has succeeded. There are many lacunæ, much scrappy information, and some insistence upon views not generally accepted. For the most part, however, the information given is trustworthy, and the faults are chiefly faults of omission. A preliminary chapter deals with practical methods of embedding, and so on. (We do not agree with putting the bisected eye, after washing from formalin, into *70* per cent. alcohol.) The usual anatomical divisions are followed in the next eight chapters. Then come glaucoma, general diseases affecting the eye, and bacteriology. There

are many references to recent work. Thus Thomson Henderson and Arthur Thomson's theories of glaucoma are discussed. The author pins his faith to the latter, though we think that many ophthalmologists will not agree with him. Further, the relatively large space devoted to Henderson's views might have been better employed in an elementary book for students, who will be unable to appreciate the difficulties of his theory without a previous discussion of the physiology of the intraocular pressure, and that we have been unable to find. The illustrations are from original photographs and are good.

Allgemeine Biologie. Von OSCAR HERTWIG, Direktor des Anatomisch - Biologischen Instituts der Universität Berlin. Vierte umgearbeitete und erweiterte Auflage. Mit 478 teilsfarbigen Abbildungen im Text. Jena: Gustav Fischer. 1912. Pp. 787. Price, paper, 19.50 marks; bound, 22 marks.

ONLY three years have elapsed since the third edition of this work was published. This, the fourth, has undergone considerable changes. The text has been here and there curtailed, but over 60 pages have been added, while the number of illustrations has been increased from 435 to 478. In order to bring the text up to date certain chapters have been expanded, such as those on the action of the β and γ rays on ova and spermatozoa; and those on the survival of tissues, and on the *in vitro* methods used, more especially by American investigators, to keep alive tissues removed from the body. The new facts about chondriosomes, dimorphism of spermatozoa, heterochromosomes, hormones, and secondary sexual characters and the doctrine of heredity have all been added to. Otherwise the general arrangement is the same.

The classification of the book as a whole is simple. The first part deals with the cell as an independent organism, and runs to about 450 pages; while the second part, the cell in union with other cells, occupies the rest of the volume. In connexion with the newer facts regarding the structure of the cell protoplasm, we would draw attention to the full account of those small, well-defined granules or shorter or larger thread-like bodies described by Benda and Meves in both animal and vegetable cells known as "chondriosomes" and "mitochondrian." Exactly in this direction great advances have been made recently. Moreover, the notes on this subject—as on all the other subjects set forth in this work—are illustrated by clear, well-printed illustrations in the text. In fact, the high quality of the illustrations is a striking feature throughout.

Histology and function, growth and repair, are considered together, so that we obtain a true biological conception of cell life and not merely a treatise on cytology, which is apt to become a rather sterile pursuit when treated solely from the morphological aspect. We do not find any material changes in the chapters on excitability and stimuli. The whole question of the development and the mechanism of division of cells is obviously expounded *con amore*, and, be it added, from an overflowing knowledge of those recondite processes as they occur in both plant and animal cells. About 80 pages are occupied with this subject alone, and nearly 100 pages are assigned to the phenomena of impregnation and fertilisation of cells, ranging through all classes of animals and plants. Parthenogenesis—both natural and artificial—is fully described, while due attention is given to Loeb's experiments on this and allied subjects. At the end of the first part the literature relative to each chapter is given seriatim and amounts to 20 pages of closely printed matter, and the same arrangement is adopted for Part II. (about 18 pages).

The second part is perhaps more interesting than the first, because there enters the question of the interaction of cells and all that this foreshadows. If the reader will turn to the excellent exposition of Weismann's germ plasm theory and to the chapters on the theory of biogenesis, he will find an admirable exposition of these abstruse subjects. Many illuminating pages are devoted to the external factors concerned in organic development"; in fact, the author out of the fulness of his knowledge makes us feel how few really know much about the subject. With equal facility he discourses on the inner or internal factors of organic development. We can merely refer to the thoroughness displayed in dealing with the facts, theories, and doctrines that surround the question of heredity, and the other score of questions that are treated in the remainder of the volume.

We offer to the author our thanks for the manner in which he has marshalled and expounded that immense—shall we say "kolossal"?—array of facts which for the present goes to make up what is called "general biology," a department of "natural science" to which he himself and his forebears made very material and extensive contributions.

Einführung in die Physiologie, Pathologie, und Hygiene der menschlichen Stimme. Von Dr. ERNST BARTH. Mit 260 Abbildungen und 2 farbigen Tafeln. Leipzig: Georg Thieme. Pp. 507. Price 15 marks.

THIS work, as its title would suggest, is divided into three parts. The first 317 pages are devoted to the physiology of the voice, and constitute, perhaps, the more important part. By way of illustrating the thorough and exhaustive nature of this section, it may be mentioned that not only the anatomy of the larynx is described, but that of the organ of hearing is also dealt with. The second part is given up to the pathology of the voice, and in about 124 pages one finds what is essentially a treatise on diseases of the larynx. The remaining 60 pages cover the hygiene of the voice, which includes the physiological importance of athletics upon the voice.

The book throughout is profusely illustrated, and contains a good index, which adds to its value as a work of reference. It is not only a demonstration of the affections of the voice, but also a treatise on the scientific investigation and treatment of the same. Although there has been no dearth of publications on this subject, those interested in it can undoubtedly turn to Dr. Ernst Barth's treatise with advantage.

The Treatment of Short Sight. By Professor Dr. J. HIRSCHBERG, Geheimmedicinalrath in Berlin. Translated by G. LINDSAY JOHNSON, M.D. Cantab., F.R.C.S. Eng. With 12 illustrations. London: Rebman, Limited. 1912. Pp. 123. Price 5*s.* net.

THIS brochure is an essay on short sight founded upon a lecture delivered in Berlin at the request of Professor von Leyden. It is a very sound presentation of the subject, characterised by scintillations of Professor Hirschberg's archæological and philological erudition, and permeated throughout by his forceful personality.

The essay begins with Galen and ends with Hirschberg, and in the 120 pages everything pertaining to myopia—history, optics, pathology, treatment—seem to be compressed. The style is stimulating, if at times irritating; but even where most dogmatic or most uncompromisingly critical of the teaching and treatment of other ophthalmologists there is generally sound wisdom at the foundation. Indeed, Professor Hirschberg's teaching is orthodox to a degree, and his strictures and sarcasms are poured out upon the ill-judged methods of enthusiasts. Thus, most surgeons will agree that in myopic detachment of the retina "the facts speak loud and clearly, the theories are debatable, the treatment risky, the cure rare." The author discusses the treatment of high myopia by extraction of the

lens in a manner which will commend itself to those of a judicial mind. His opposition to the operation appears to have increased with increasing experience. He says: "From the close of 1893 to the commencement of 1901, I have relieved 24 persons in all from high myopia" by this method; and he adds in a note: "Since then none! The more bad results I met with among the operations of my colleagues, the more did my hesitation increase."

But these are debatable points, and most of the essay deals with straightforward facts. The descriptions of the causes of short sight, the damage done to various parts of the eye, preventive measures, and so on, are quite admirable, and the amount of useful information conveyed in a short space is truly remarkable. Readers will be instructed and at the same time entertained by a perusal of the book. The translator, the printer, and the publisher have done their parts well.

Handbuch der Serumtherapie und Serumdiagnostik in der Veterinär-Medizin. Herausgegeben von Dr. M. KLIMMER, Ord. Professor, Direktor des hygienischen Instituts und der Seuchenversuchsanstalt an der tierärztlichen Hochschule in Dresden; und Dr. A. WOLFF-EISNER, Arzt für innere Krankheiten und Vorsteher der bakteriologischen Abteilung des städtischen allegemeinen Krankenhauses Friedrichshain-Berlin. Band II. vom Handbuch der Serumtherapie. Leipzig: Dr. Werner Klinkhardt. 1912. Pp. 500. Price, paper, 18 marks; bound, 20 marks.

IN this text-book, edited and partly written by the above-named authors, assisted by 20 collaborators, three full-page plates illustrate respectively the eye reactions in a tuberculous cow and a glandered horse, and the local reaction in a glandered horse from subcutaneous mallein injection.

As is usual in German publications of the nature under notice, protective and curative inoculations against hog cholera, swine fever, and swine erysipelas receive full consideration, and they occupy the position of precedence in this book. Writing from a general point of view, it may be stated that the inoculations, both preventive and curative, seem to be much more successful in the case of swine erysipelas than in those of the other two diseases. Inoculations against anthrax and symptomatic anthrax (black quarter) are discussed in 20 pages of the text. The chapter on protective and curative inoculation against foot-and-mouth disease does not seem very practical to us, and no notice appears to have been taken of Dr. Siegler's recently reported discovery.

In testing cattle with tuberculin the temperature is to be taken, according to the author, every two hours from the sixth to the twenty-second hour until the "critical" temperature is reached, and in animals where the temperature reaction is delayed and the "critical" temperature not yet reached observation must be conducted until the latter occurs or a decline of temperature is evident. The trials with "abortin" undertaken by the English Abortion Commission are given in detail, but apparently, notwithstanding the favourable view of the results given, no further investigation has been undertaken in German circles. The serum and vaccine treatment of streptococcic diseases, inoculations against calf diseases, the serum treatment of fowl cholera, and the protective and curative inoculation against distemper of the dog are next considered. With regard to the last-named disease, although vaccines and sera seem to have been employed in plenty against it, most scientists declare unfavourably concerning them, as, indeed, one would expect, considering that the organism of distemper has not yet been widely identified even if discovered. Tetanus antitoxin in stables infected with the organism seems to have given good results by its use, especially when combined with disinfection. The use of mallein in glanders is fully dealt with, but although the names of Hunting and McFadyean appear once in the list of literature at the end of the chapter, no reference is made to Hunting's standard work on "Glanders," which may be due to the fact that the book has not yet been translated into German.

There is a chapter on pyozyanase and its use. It has been used beneficially in spray form and as an intravenous and intraperitoneal injection. In surgery, midwifery, diseases of the ear, eye, and skin, in dentistry, in diphtheria, strangles of the horse, and distemper of the dog, the results from its application have been good. Agglutination and precipitation, fixation of the complement, and anaphylaxia and anaphylactic shock are thoroughly considered in Chapters XXIX., XXX., and XXXI. The rat and mouse exterminator will find a wealth of condensed information as to the destruction of these pests by the latest scientific methods within the pages of this book.

The whole volume is a valuable literary mine of instruction as to the origin and preparation of animal products, and their therapeutical and diagnostic use on animals. The organisms of distemper (N. S. Ferry), of foot-and-mouth disease (Dr. Siegler), and of Jöhne's disease (Twort and Ingram) may have been discovered almost simultaneously with the production of this work, and further valuable information may be expected.

LIBRARY TABLE.

The Land that is Desolate. By Sir FREDERICK TREVES, Bart., G.C.V.O. London: Smith, Elder, and Co. 1912. Pp. 287. Price 9*s.* net.—The "Land that is Desolate" is the Holy Land, a land about which more has been written, and to which more pilgrims have turned their steps, than to any other place in the world. Sir Frederick Treves is already well known as the author of other books of travel, such, for instance, as "The Cradle of the Deep," a book dealing with the West Indies. In that country he evidently enjoyed himself, but in the book now before us there are traces of disillusion. And disillusion is, we fear, the lot of everyone who now goes to the Holy Places. The hand of the spoiler lies heavy on the land, centuries of pilgrimage have vulgarised, for at least two great religions, the most sacred sites in the world; and finally, be it said with regret, nowhere else has the seamless robe of Christ been torn into more fragments. Moreover, the faith or credulity of early days is wanting in these times. Even the inexpressible charm of the East seems to have escaped Sir Frederick Treves in great part, and the filth, the squalor, the beggars, and the general nakedness of the land appear to have entirely obscured for the writer the attraction of the light, the colour, the transparent atmosphere, and the curious fascination of an olive grove. The portions of the book which appeal to us most are the chapter upon the Jordan and the Dead Sea and those dealing with Damascus. The river and the lake naturally figure largely in all accounts of pilgrimages to the Holy Land, and Sir Frederick Treves will be interested, if he has not done so already, to compare his own impressions with those of Fabri, who visited the Holy Land about 1483. Both travellers tried the water of the Dead Sea, but with a somewhat different experience. Sir Frederick Treves found the water in bathing "warm and very clear, but it felt oily or soapy ..... the taste of the water was merely salt ..... for some time after I had left the lake there was a sensation as if a mustard plaster had been applied to the shaven part of one's face." Now let us hear Fabri, who was not so daring as to bathe: "Whoever partakes of this water and places some in his mouth, at once finds the inside of his mouth corroded by reason of the excessive saltness, as if he had taken very hot water, this I myself experienced." Again: "He who

puts his hand in the water at once feels prickings, just as though his hand was covered with fleas and gnats, and he is obliged to rub them as if he had the itch, and this feeling endures for many hours, neither is it easy to wipe away this water from the hands, for it is just as though they had been rubbed with oil."[1] On most points it will be seen that across the gap of over 400 years the observers agree. In Damascus the call of the East does seem to have made itself heard, for Sir Frederick Treves gives a really sympathetic account of the site of the city and of the bazaars. He was unfortunate in the end of his journey, for he came in for a serious railway accident on his way to Haifa, and upon embarking at that port for a very severe gale. Possibly these unpleasantnesses have in some way influenced his book, which, well worth reading as it is, does not, in our opinion, do justice to its theme. We note that on p. 10 Sir Frederick Treves says: "No one knows where Tarshish was. ....." From an article which appeared in the *Times* about the middle of November, 1912, it would seem to be pretty well established that Tarshish stood where now stands Seville.

Lehrbuch und Atlas der Konservierenden Zahnheilkunde. Von Dr. GUSTAV PREISWERK. With 323 illustrations and 32 plates. Munich: J. F. Lehmann. 1912. Pp. 404. Price 14*s.*—This volume forms one of a series of handbooks of medicine published by Lehmann's, of Munich, and deals with the various operations embraced under the term "conservative dentistry." Dr. Gustav Preiswerk's name is sufficient evidence that the work has been well carried out. By means of semi-diagrammatic illustrations the different steps of the various operations are shown in a clear and instructive manner. The book may be of real value to the dental specialist.

Hoblyn's Dictionary of Terms used in Medicine and the Collateral Sciences. Fifteenth edition. Revised throughout, with numerous additions, by JOHN A. P. PRICE, B.A., M.D. Oxon., M.B. Lond. London: G. Bell and Sons, Limited. 1912. Pp. 878. Price 10*s.* 6*d.*—A factor in Hoblyn's Dictionary which has contributed largely to its arriving at a fifteenth edition is undoubtedly its literary quality, and this quality is continued in the present edition. As a companion to the medical reader who is not a profound student, however, we fear that the work may often prove disappointing. Its discrimination in eliminating terms the significance of which is presumably left to be inferred by a well-educated practitioner who also possesses a fair all-round knowledge of the subjects to which the medical terms relate is too great, and will render it an impractical rival to some of the newer dictionaries, which take little preliminary knowledge for granted. As an example of what we mean, we may point to the omission of such words as bactericidal, bacteriotropic, nidus, decinormal, hyperchlorhydria, ileocolostomy, leucopenia, zymase, oxidase, sympus, apus, and dipus, and very many others. As to eponymous terms, Trendelenburg's, Sims's, and Walcher's positions are now given. Of operations, very few are given, and those chiefly such as can be found in the ordinary text-books; the newer ones constantly recurring in periodical medical literature are frequently absent. We still are unable to find Babinski's, Rovsing's, or Kernig's signs, Lissauer's, Bertin's, or Gowers's columns, Bassini's, Kraske's, or Stacke's operation, and many others. The first person singular of Greek verbs is still translated by an infinitive. Although the extension of bacteriological science is referred to in the preface, only 25 bacilli and 4 bacteria are mentioned. Hippuris (equisetum) finds its place in alphabetical order, but hippuric acid has to be looked for under hippo. We fail to see why zymic acid should be given only as zumic, seeing that in all other words the Greek *υ* is transliterated y (zymosis, zymome, zymotic, zygoma, &c.). On p. 877 *ξυγός* is given for *ζυγός*, a printer's error. As we said in reviewing the former edition, the book will be of great service in reading the older writers in medicine, but we fear it will have to undergo complete reconstruction and enlargement if it is to compete for the favour of the general medical reader with the newer medical dictionaries.

Diet Charts: For the Use of Physicians. Compiled by J. CRAIK TAYLOR, M.B. Glasg. Glasgow: John Horn. Price 1*s.* net.—These diet charts are drawn up for use in fevers, convalescence, and dyspepsia, for constipation, and other conditions. The intention is that the practitioner who uses them shall either strike out or underline the food materials which are suggested in the charts. It is a question whether the diet of a nursing mother need be as circumscribed as suggested in these charts, but they serve, at any rate, as a reminder to the practitioner of many items of diet the advantages or disadvantages of which should be considered under different conditions.

The Student's Guide to Life Assurance in Theory and Practice. By ARTHUR WYNDHAM TARN, F.I.A. London: Macdonald and Evans. 1912. Pp. 224. Price 3*s.* 6*d.*—This book is mainly concerned with a consideration of life assurance from the point of view of the actuary. It is a good guide to the study of the elementary principles of insurance. The medical examiner, as a rule, confines himself to a statement whether, after due inquiry and examination, the life may be considered an average one or below the standard, and troubles himself but little as to the actuarial side of the question. It is desirable, however, that a medical man who undertakes a fair amount of life assurance work should make himself acquainted with the elementary principles upon which the mortality tables are founded, and those on which the calculations of premiums are made. In Mr. Tarn's work much interesting information will be found in regard to these matters, but the greater part of the book is taken up with material that concerns the actuary and his assistants only. There is a chapter on the medical aspect of life assurance; some of the remarks to be found therein are of value, although they are brief, such as the observations on "family history," but the "medical views as to treatment of impaired lives" are too sketchy to be of value to the examiner. The last section of the work is taken up with a statement of the salient features of other branches of insurance.

La Vie du Règne Minéral. By RENÉ SCHWAEBLÉ. Paris: Jules Rousset. 1913. Pp. 118. Price 3 francs.—This product of the modern French School of Neo-biology is a treatise on "Mineral Biology: the Life of the Inanimate." The idea is an ancient one and may not appear altogether incredible to those who have realised how largely the energy of organic growth and development is derived from mineral substances. The little book is full of interest and stimulating thought, although one can hardly be expected to take the author seriously in his excursions into the realm of alchemy and the transmutation of metals. As might be expected, the subject of osmotic growth is very fully treated, and the book is illustrated by some very interesting pictures of Leduc's beautiful productions.

MISCELLANEOUS VOLUMES.

LITTLE books on big subjects in their physical and moral relations are brought out to-day in great abundance. A selection of those which have reached us recently may be conveniently reviewed in association with each other.

In the volume entitled *Morals and Brain*, in the series of "New Tracts for the Times" (London: Cassell and Co. 1912. Price 6*d.* net), Sir THOMAS CLOUSTON gives an admirably

[1] Fabri Evagatorium, Ed. Hassler, vol. ii., pp. 154, 155.

clear and simple account of what science has to teach concerning the relationship of moral conduct to the action of the brain in health and disease. The most urgent bio-social problems that we have to deal with nowadays are, as we are coming more and more to recognise, in the main, problems of character, and, so far as they admit of the application of preventive measures to the generation already in being, they are problems of ethical training in youth and adolescence. For this reason it is of the utmost importance that the social reformer and the philanthropist should understand the physiological basis of character and the conditions which influence its development. This excellent little volume will furnish that knowledge in an easily assimilable form, and its perusal should go far to dispel some of the remarkable illusions which, as the debates on the Mental Deficiency Bill have shown, are still cherished even by sapient legislators.——It is to be regretted that the author of *Can a Drunkard be Cured?* Mr. E. BROWN, M.R.C.S., L.R.C.P. (London: Francis Griffiths. 1912. Pp. 85. Price 2*s.* 6*d.* net), who is a medical man and presumably intends to treat his subject from a medical standpoint, should not have displayed a similar moderation and accuracy. He has, however, succumbed to the evil tradition which leads so many persons, when they write about alcohol, to adopt the phraseology, and in a large measure the intellectual standards, of the teetotal tract. The work, it is true, is addressed mainly to actual or potential drunkards, and this fact may possibly explain, if it does not justify, the use of an emphatic and rhetorical style as an aid to suggestive therapeutics. Devices of this kind, however, are rather prone to react on the writers who have recourse to them and may beget a tendency to exaggeration of statement; and there are evident traces of such an influence in Mr. Brown's book. It is an obvious exaggeration, for instance, to assert that half the insanity of the country is caused by drink, or to suggest that prostitution is mainly due to alcohol; and it can hardly profit the cause of sane temperance, and is assuredly irrelevant to the reform of the inebriate, to draw lurid pictures of the dangers that surround "the so-called moderate drinker." With regard to the special subject of the book, the treatment of the drunkard, the author has nothing very novel to say, except that he lays rather more stress than is usual on the value of auto-suggestion, from which he claims to have seen permanent results.

By all those who have long realised that the housing difficulty lies at the root of many of our social problems Mr. RAYMOND UNWIN'S pamphlet, *Nothing Gained by Overcrowding* (London: Garden Cities and Town Planning Association. 1912. Pp. 20. Illustrated. Price 3*d.*), will be read with the greatest interest, because he has there set out to prove that even from the economic standpoint nothing is gained by putting as many houses as possible on a given area. When houses are built in long serried ranks, as is the case in the poorer parts of all large towns, the expense of road-making is very great because such a considerable proportion of the ground must be occupied by roads in order to provide sufficient frontage for the large number of houses, whereas by the system of grouping the houses and giving more space for gardens and public recreation grounds less amount of road-making is required, and consequently the expense is diminished. Mr. Unwin has himself given practical demonstration, both at Letchworth and at Hampstead, of his theory that there is no economic obstacle in the way of limiting the number of houses or other buildings to be erected on a given area of land, and the space thus saved from road-making can be devoted to gardens and public recreation grounds. When the number of houses to the acre is limited the builder's profit either on the buildings themselves or on the increased value of the land due to development will not be reduced if the profit be estimated per house instead of per acre. Limiting the number of houses per acre renders each individual plot large enough to hold quite a considerable sized house, but it is important to check the tendency to build houses of larger size than are required by the necessities of the district. Hence, in addition to restricting the number of houses per acre it is wise also to limit the number of cubic feet of building to the acre. This principle is in some measure observed in the Town Planning Act of 1909 and in the regulations of the Garden City at Letchworth.——Mr. H. CORBIN, B.Sc. Lond., D.P.H., medical officer of health of Stockport, in a useful paper on *Housing in Practice* (London: 1, Upper Montagu-street, Russell-square. Pp. 16), lays stress on the necessity of pure air, adequate light, and cleanliness in the dwelling and work place as essential for the prevention of tuberculosis and the reduction of infant mortality; he might also have added as one of the best means of promoting temperance. Like Mr. Unwin, he emphasises the advantages of limiting the number of houses per acre, and insists on the importance of local authorities purchasing as much land as is available in and around their areas, and also exercising care in the selection and supervision of tenants in the houses of the poorest class. As he well says, "the existence of slum dwellings encourages the indolence of those who find it less trouble to live at ease in the squalor of a slum dwelling for which they pay 2*s.* a week than to work a few days more and live in a better house with a more wholesome environment at a rent of 4*s.* 6*d.* a week." Both these papers are well worth careful study by all social reformers. The principles which they advocate may be found exemplified in the Garden City at Letchworth, as one result of which the infant mortality does not exceed 54·5 per 1000.——*Fresh Air and How to Use It* is the title of a book by Dr. THOMAS SPEES CARRINGTON (New York: 105, East Twenty-second-street. 1912. Pp. 250. Price $1), in which the various plans for obtaining fresh air by the modern house-dweller are described. Ventilation, window tents, roof bungalows, wall houses, permanent sleeping porches, methods of screening porches, tents, roof playgrounds, and open-air cottages are described and illustrated, and suggestions are made for the planning of new houses with open-air apartments.

JOURNALS AND MAGAZINES.

The Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. VI., No. 22. January, 1913. Oxford: At the Clarendon Press. Subscription price 25*s.* per annum. Single numbers 8*s.* 6*d.* each.—The contents of this number are: 1. Study of a Case of Dyspituitarism, by Gerhardt von Bonin. An exhaustive account is given of the pathological features found at the necropsy of a case presenting the clinical characters of benign acromegaly, which had been observed by Mr. Frank Corner for over 20 years. The physiological and pathological effects of the hypophysis upon the various functions of the body are fully discussed. The paper is one of special interest, and is accompanied by a useful bibliography. Among the general conclusions arrived at are that there are hardly any cases of pure hyperpituitarism or of pure hypopituitarism, both processes being generally found together. Sexual infantilism and adiposity are symptoms of hypopituitarism, and are usually found to be associated with acromegaly which is the result of hyperpituitarism. It is suggested that this is accounted for by Cushing's theory, that one secretion of the pituitary body enters the blood directly, whilst the way for the

other to the third ventricle is blocked by the pressure of the tumour upon the infundibulum. 2. The Fragility of the Red Blood Corpuscles, by G. G. Butler. It is found that the fragility of the red corpuscles is extraordinarily constant in normal and pathological conditions, but a number of general conclusions in regard to an increase or decrease of fragility are given. 3. Iron in the Blood, by P. H. C. Fowell. As a result of a long series of estimations with Autenrieth's instrument, it is hoped that its value has been proved for the clinical estimation of iron in the blood, and that Biernacki's statement, that estimations of the total iron give no true index of the hæmoglobin value, has been confirmed. It is also shown that in all individuals there is an excess of iron in the blood over that which is combined with hæmoglobin, and that this excess bears a varying ratio to the total amount of iron. 4. Premature Ventricular Beats in Heart-block, by A. E. Naish. A case is recorded and numerous tracings and electrocardiagrams are figured and discussed. 5. Observations on Auricular and Nodal (?) Extra-systoles, by E. E. Laslett. 6. Exceptional Types of Slow Heart Action, by Thomas Lewis. 7. A case in which a High Speed of the Auricles did not Produce Tachycardia, by William E. Hume. 8. Congenital Family Steatorrhœa, by A. E. Garrod and W. H. Hurtley. The case of a boy, aged 8 years, presenting a true steatorrhœa from infancy—i.e., the passage from the bowel of liquid fat which solidifies on cooling—has been carefully studied. It is suggested that the boy is the subject of a rare inborn error of fat absorption, probably a Mendelian recessive characteristic, and on a par with such anomalies as alkaptonuria and cystinuria. 9. Critical Review: Artificial Pneumothorax, by E. Rist, from the Laennec Hospital, Paris. After a historical sketch of the evolution of this method of treatment a clear description of the technique of the various methods used in its application is given. The accidents, difficulties, and complications are then considered, and a discussion of the selection of cases suitable for its employment follows. Other matters dealt with include the clinical results and duration of treatment, the morbid anatomy of the lung in cases treated by it, and the theoretical explanation of its therapeutic effects. The bibliography accompanying the article extends to 67 publications.

Le Nourrisson. Edited by A. B. MARFAN. Paris: J. B. Baillière et Fils. Published every two months. Price 12*s.* per annum (14*s.* for foreigners). A new review, bearing the above title and under the editorship of Dr. A. B. Marfan, will henceforth be published six times a year in Paris. The publication of a journal devoted exclusively to the medical aspects of infancy is quite a new departure in the annals of pædiatrics. The growing importance of the subject which this journal embraces, and the vastness of the literature which accumulates on matters relating to infant mortality and infant morbidity, certainly warrant the publication of a periodical which shall deal exclusively with these subjects, and the leading part that Paris has played in all international efforts to improve the conditions of infant life makes it peculiarly appropriate that the French capital should be the birthplace of this new journal. The first number, published in January, contains several original articles on practical matters relating to the hygiene and pathology of infancy, of which the most important are one on a Case of Congenital Stenosis of the Pylorus, by Dr. Marfan and Dr. Baudouin, and a second on the Control of the Rearing of Infants (Contrôle de l'Élevage des Nourrissons), by Dr. E. C. Aviragnet, general secretary of the League for the Prevention of Infant Mortality in France. A considerable part of this number of the review is taken up with some sound *résumés* of important articles from the general literature bearing on the subject. The first number augurs well for success and we offer the editor and his staff our congratulations.

New Inventions.

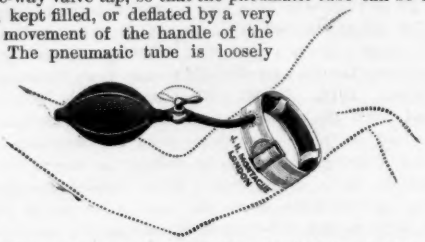
THE FINGER GRIPS OF FORCEPS.

THE finger grips or plates of forceps have many varieties of markings thereon to ensure a proper hold of the instrument. The old file markings that were in almost universal use are now considered taboo in these days of "aseptic handles" (although it is curious to note that similar serrations still are retained as indispensable at the business ends of the blades). File markings have been succeeded by various breadth and depths of flutings, or by a broad shallow groove extending the whole length of the finger plate. Neither of these grips proves satisfactory; they are barely sufficient when the fingers are dry, they are inefficient when the fingers are wet, and a hold is impossible when the fingers are slippery. For some years I have been using sundry eye instruments and forceps in which the finger grips were secured by cutting holes in the flat plates. My experience of them has been most happy; they are superior in security to even the old file markings. The illustration shows a pair of iris forceps of the pattern used as conjunctival forceps in my new squint operation of subconjunctival reefing. The holes are cut square-edged and give a most sensitive grip—in fact, "grip" is a poor word in its suggestion of strenuousness; even when the fingers are wet, or purposely slippery, it is possible to hold these slender forceps accurately. The holes lighten the instrument, a matter of some consideration in eye work, and they are obviously clean. The size of the holes can be made large in proportion to the size of the forceps. The forceps are made by Messrs. Weiss and Son, Oxford-street, London, W.

Harley-street, W. N. BISHOP HARMAN, F.R.C.S.Eng.

NEW TOURNIQUET FOR INTRAVENOUS INJECTION.

THE pneumatic tourniquet here illustrated has been designed by me for use in giving an intravenous injection. I found on more than one occasion that, after having passed a cannula needle into a vein, the movement during the release of the ordinary rubber tourniquet resulted in the needle piercing the wall of the vein, or even leaving the vein. To obviate this I devised the pneumatic tourniquet. It consists of a tube of firm rubber connected by a smaller tube to an inflating ball. In the smaller tube is placed a three-way valve tap, so that the pneumatic tube can be inflated, kept filled, or deflated by a very small movement of the handle of the tap. The pneumatic tube is loosely



attached to a firm band of webbing fitted with a buckle to fix on the upper arm. In use the webbing band covering the tube is fixed loosely in position and the latter inflated by pressing the ball; the valve is turned into the mid position, and in a few seconds the veins are made prominent. After the selected vein is punctured the valve is again turned to the third position, when the tube becomes deflated and the venous circulation of the limb recommenced and the injection given. The deflated tube remains in position until the injection is finished, thus obviating any movement of the limb whilst the needle is *in situ*, the whole cycle being worked by the operator with ease. I have used this tourniquet now many times and find it answers all the requirements I wished. The appliance has been made for me by Mr. J. H. Montague, 69, New Bond-street, W.

R. H. JOCELYN SWAN, M.S. Lond., F.R.C.S. Eng.
Wimpole-street, W

THE LANCET.

LONDON: SATURDAY, JANUARY 25, 1913.

The National Insurance Act.

THE administration of medical benefits under the National Insurance Act is now in some sort of working order, the probability being that in those places where the old relations of medical men to their patients have been least troubled the Act is working best, while in those places where the maximum alteration in previous conditions has occurred, as in certain of the London districts, the machinery is still very imperfect. This is, of course, not the ideal result of a great measure of reform, though it must be allowed that such complexities of routine as have been necessarily introduced into professional life could hardly be expected to produce anything at first without considerable trouble. Much or all of the trouble could have been avoided if the measure had been inspired by better knowledge and passed into law after due deliberation, but no practical point is served by keeping up this cry, save where it can be rightly used in any move for necessary amendment.

In another column there will be found an account of the critical meeting of the Representative Body of the British Medical Association, at which it was finally determined that the restrictive power of the pledge and undertakings demanded last year by the British Medical Association should be removed. The meeting was a private one and lasted two days. The proceedings, as will be seen by the account of our representative, whose presence was courteously permitted, were throughout of an anxious character, as it was impossible for the Representatives not to feel that great interests were involved, and that obvious solutions for some difficulties would have merely aggravated other difficulties perhaps of equal importance. During the first of the two days, during which the Representative Body was in session, attempts were made to arrive at some middle course whereby those who thought that the pledge should be maintained in full force and those who thought that it should be abrogated might fall into some common line of action. It was felt to be necessary, in the position in which the British Medical Association was placed, not to ostracise or even blame those who had already gone upon the panels, as it was known that many of them had given their names in unwillingly. But it was necessary also to recognise that those who had remained off the panels had done so from a high conception of their duty to the Association and from a belief that the existing scheme for the administration of medical benefits is a menace to the progress of medicine. Various motions and amendments to motions were brought forward in the effort to find some mid-way which should be equally acceptable to both parties; but all these debating contrivances were of no avail.

Eventually, and not till the second day of the session, a resolution was obtained by 115 votes to 35—a majority sufficient to make the action of the Representative Body binding upon the Council and members of the Association—in favour of releasing all members of the medical profession from their pledge and undertakings, a reversal of policy which it had been widely foretold was inevitable. All men are therefore now at liberty to go on the panels, although they will do so with the remembrance that they are serving under Regulations which are termed by the Government "provisional." This vote of the Representative Body has, we believe, enabled adequate panels to be formed in different parts of the country, even where this had not already occurred; but in London the revolt against the working of the Act is maintained, and the composition of some of the panels remains unsatisfactory.

The General Practitioner and Operative Surgery.

A PROMINENT American surgeon, after an extended and recent tour through England, remarked, on his return home, upon a thing that struck him with surprise in the medical practice of this country. He found the extent to which, even in country districts, nearly all the operative work was sent off at once to some hospital or infirmary, instead of being undertaken, at any rate as regarded the simpler cases, by the local practitioner, difficult to comprehend. He did not attribute this to any lack of competence, for in many cases not only did the practitioner hold distinguished surgical qualifications, but intercourse with him showed him to possess a high standard of surgical knowledge. But few if any medical men, he said, of equal calibre in America would deprive themselves of the continuous growth of experience or of its legitimate recompense which such a course entailed, or would subject their patients to the many disadvantages incident on removal to an alien environment. If a case came within the reasonable capabilities of a medical man, and anything approaching satisfactory—not necessarily ideal—environment was obtainable, the practitioner in America would operate. He attributed the British practice to an abnormal sensitiveness to responsibility resulting from submission to a convention inherited from a past age, when the average general practitioner was less highly educated in surgery and had rarely enjoyed the opportunities for gaining practical experience afforded by a good residential appointment. Partly right in his views, our American critic left out of his calculations the curious passion that exists in many localities for criticising the medical practitioner while ignoring his difficulties.

This subject was ably discussed last week at a meeting of the Medical Society of London, reported elsewhere in this issue, by Mr. T. NORTH, in a paper on the Rise and Possibilities of the General Practitioner-Surgeon. Mr. NORTH pointed out that between the rich, who could afford to retain the services of any surgeon whom they might know by reputation, and the very poor, who, if for no other reason than the absolute impossibility of their surroundings and the inevitable lack of nursing, must continue to go to hospitals

for serious operative measures, there existed a large and rapidly increasing class of people who, though unable to afford the pure surgeon's fees, could afford fees for surgery that would be accepted by the general practitioner, and whose means and mode of life made possible the provision of a satisfactory environment and proper nursing. By their resort to hospitals the hospitals are overcrowded and compelled to spend at an unnecessarily high rate, the honorary surgeons have more work to do from which they receive no financial return, while the general practitioner is deprived of fees he might fairly enjoy for work that compares favourably as to its responsibility with that entailed by a difficult confinement. There can be no doubt that much of Mr. NORTH'S plea, in which these things were put out, is sound. The high level to which medical education has been raised of late years means that, in the case at any rate of the by no means insignificant number who have held good resident appointments, satisfactory surgical work can be done if the local environment of the patient is suitable, and if intelligent assistance with trained surgical nursing can be got. The extension of the cottage hospital system would do much to meet the case. It would ensure the presence of adequate nursing in the locality, establish a sufficient amount of proper assistance, including the development of a local semi-professional anæsthetist, and might render available to all local practitioners access to those special means of diagnosis and treatment which are too costly for him to invest in for himself, having regard to his limited opportunities for using them. It would also afford shelter in cases where the patient's domestic arrangements could not suitably be made to meet the case.

We agree with Mr. NORTH that the relations of consulting surgeons and general practitioners would be greatly improved by the extension of operating by competent general practitioners, and we think it possible, also, that the consulting surgeon would really be the gainer financially through the frequency with which he would be called in for consultation upon patients who, if they came into his hands for operation, could not afford his fees, and must, therefore, be operated on by him in a hospital for nothing. Also the time at his disposal for the consideration and development of original thought and procedure would be increased. The advantage to the public, too, would frequently be great, for the patient would often gain by remaining at home and the avoiding increased nervous dread. Moreover, as great surgical experience as possible in the general practitioner is desirable in the interests of all classes of the community alike; for persons of no class are exempt from the danger of serious emergencies involving immediate surgical intervention, and it is obvious that emergency operations are even more dangerous to life, and call for even greater surgical skill and resourcefulness than those for which adequate preparations can be made, and time, place, and assistance carefully selected. We feel constrained, however, to demur to the individual instance of what one must call malpractice on the part of a hospital operating surgeon adduced by Mr. NORTH to strengthen his argument in favour of the general practitioner-surgeon doing his own surgical work. It is obvious that no general conclusion can be drawn from such a case, even though it be true, because it cannot rightly be alleged that such a thing often happens. A like mode of argument might easily be made to favour the abolition of the entire medical profession. But this is merely an instance of the all too common tendency to strain a point in favour of the thesis advocated. Mr. NORTH'S admirable paper is convincing enough without it, and if read with a fair and open mind should do much to arouse a sympathetic interest in the subject.

The German Imperial Insurance Act.

THERE has been presented to Parliament during this week a report dealing with medical benefit under the German Sickness Insurance legislation, which deserves the study of all our readers, for any information upon the administration of medical benefits under an insurance system is extremely valuable to us. It cannot be too often repeated that the Regulations under which our own National Insurance Act is being worked are provisional in their nature, and it is certain that considerable amendments must be made if the prognostications of some of us prove unfortunately true, while the most ardent supporters of the Act, those who appear to consider that a noble object is a sufficient excuse for any unfortunate coincident occurrences, admit that in so elaborate and far-reaching a measure it is inevitable that modifications will have to be made. Now it is an open secret that much of our own legislation has been inspired by the German pattern. It is, therefore, particularly interesting to look closely at that pattern, and the Commissioners of the National Insurance Act have done well to publish this report, and place the situation as they see it freely before the public.[1] As the German Insurance Consolidation Act, though passed in 1911, will not come into full operation until the beginning of next year, the report deals with the statutory Sickness Insurance Organisations as they exist and are working at the present time, but a note warns the reader that where the new law alters the constitution of those organisations, or such of their duties, powers, or methods of procedure as specially affect the administration of medical benefit, the changes are indicated in the report in brackets. The report is based upon inquiries made personally in a number of towns in various parts of Germany, the towns being chosen with a view to ascertaining the experience of important Sickness Insurance Organisations differing in character and in methods by which the medical service is organised and remunerated. Local medical associations and representative local practitioners have been consulted, and, as a result, it is clear that there are many points of difference between the insurance legislation of Germany and of England.

For several years past THE LANCET has by articles under various headings kept its readers informed with regard to the progressive development of State insurance in the German Empire. By a coincidence in the same week

[1] Medical Benefit under the German Sickness Insurance Legislation. His Majesty's Stationery Office. Price 4½d.

that a report by our own Government on the subject reaches us, we have also received two volumes[2] in which the provisions of the Imperial Insurance Act (*Reichsversicherungsordnung*) are set forth. In view of the dissatisfaction of so many British practitioners with the insurance statutes which have become operative here, the books in question deserve attention as showing what steps have been taken by foreign medical men under similar circumstances and as being illustrative also of the latest Government report. The existence of considerable differences between the British and German systems has been frequently mentioned in our columns. For instance, under the British system old-age pensions are granted without previous contributions by the pensioner, whereas in Germany they are contributory, and the administrative body which grants them is also concerned with invalidity pensions, but not with insurance against sickness. In Great Britain, moreover, no precise distinction is made between sickness and invalidity. In the title of Dr. RUMPF'S book R.V.O. stands for Reichsversicherungsordnung, and the work itself is divided into the three sections of (1) Sickness Insurance, (2) Accident Insurance, and (3) Invalidity Insurance, with Old-age Pensions, and Assistance for Widows and Orphans. Of these the first is no doubt the most important to the medical practitioner. For many, if not most, of the lower-paid occupations it is compulsory, while for others it is optional. Insurance is compulsory (1) for workmen in general (*Arbeiter*), assistants, apprentices, domestic servants, and home workers; and (2) for the following when their regular earnings do not exceed 2500 marks (£125) per annum: the office staff of business houses or manufactories, foremen, shop assistants and apprentices, druggists' assistants and apprentices, theatrical and orchestral employees, teachers and tutors, and the crews of vessels, whether foreign-going or engaged in inland navigation. Insurance is optional for (1) healthy persons belonging to the working-class, but for some reason not coming under the compulsory law; (2) members of the family of an employer and engaged in his business without remuneration; and (3) tradesmen and other owners of businesses not regularly employing more than two compulsorily insured persons. These voluntary insurers, however, must not have an annual income exceeding 2500 marks, and are subject to certain restrictions as regards health and age.

The administration of the sickness insurance, although controlled by the State, is not in the hands of any State-appointed individual or association, but is assigned to self-governing sick clubs (*Krankenkassen*), of which five varieties are specified. The clubs decide what amount shall be paid as the contributions of the insured persons, provided that it does not exceed 4½ per cent. of the wages, except that in the so-called local sick club (*Ortskrankenkasse*) the contribution may, with the joint consent of the employer and the insured person, be as much as 6 per cent. of the wages. Dr. RUMPF has a good deal to say about the difficulties with which the club medical officers have to contend, and Dr. PLAUT is particularly full on this aspect of the question, his well-timed book being mainly an account of the operations of the great medical protection society, the Leipziger Verband, with whose operations our readers are familiar. Dr. PLAUT quotes freely from official correspondence and gives particulars of negotiations brought to a successful issue against the strenuous opposition of club committees who study economy without considering the adequacy or otherwise of the remuneration offered to their medical advisers. No one can read the two books here noticed, side by side with the Report of the National Insurance Commissioners, without feeling that we have before us, and may have for some time, a great deal of difficulty in the administration of medical benefits; and also that the British service has to work out its own salvation, and cannot trust much to the German pattern, as in Germany different conditions obtain.

[2] Arzt und R.V.O.: der Arzt und die deutsche Reichsversicherungsordnung. Von Dr. Th. Rumpf. Bonn: A. Marcus and E. Webers Verlag. 1912. Pp. 114. Price 3 marks.
Der Gewerkschaftskampf der deutschen Aerzte. Von Dr. Theodor Plaut. Karlsruhe: G. Braunsche. 1913. Pp. 246. Price 3 marks.

Annotations.

"Ne quid nimis."

BATH REDIVIVUS.

THE discovery of the strongly radio-active properties of the Bath thermal waters opens up an obvious opportunity for developing the resources of the city, and for this purpose it may be hoped that the authorities will receive unstinted and widespread support. The waters have been under the careful observation, of course, of the medical man and the chemist for some time past, but while the former knew what favourable therapeutic results in many classes of cases the waters, either by immersion or ingestion, were capable of producing, the latter could only supply a statement of analysis of negatively therapeutic constituents. As was pointed out some years ago in these columns, the composition of the Bath waters did not show any unique constituent present in important quantity, and, in fact, resembled that of many of the ordinary hard water drinking supplies in the country, which, of course, possess no special therapeutic value. It was concluded, apart from the reinforcements of treatment by diet, regular exercises, and so forth, that externally the waters were effective because they exercised a stimulating effect on the circulatory and nervous systems, helping in this way the absorption of chronic exudations, while internally their effect was regarded as merely that due to the ingestion of regular quantities of warm water promoting the removal of waste products, flushing the excretory organs, and tending to keep a regular state of the bowels. For a while our hydrotherapeutic authorities had to be content with some such explanation as this, though they had to admit that it was not a very illuminating one, as in many cases the favourable results of treatment were definite enough to point to a special therapeutic property of an agent inherent in the water itself. It is highly probable that this agent in the case of the Bath thermal waters has now been disclosed by the researches of Sir William Ramsay, who found that the waters showed an unusual degree of radio-activity due to the emanation of radium called niton. It is true that, regarded from the ordinary therapeutic standpoint, the quantity of emanation is small, but as further researches have shown, it is endowed with enormous energy, and on this account exerts intense effects which appear to be directed chiefly to promoting healthy tissue activity. Already some

remarkable developments in administering the energies of the emanation have been adopted, while further methods have been suggested which promise a greater economy in treatment. At Bath, for example, the gas bubbling through the water has been allowed to escape for centuries, carrying with it the valuable emanation. This is now collected and stored in steel tubes to be used in conjunction with spray applications. Moreover, the emanation particles are strong positive charges, and therefore if the patient be insulated and charged negatively a maximum absorption of the radio-activity may be gained. Then the fact that the emanation is rapidly eliminated from the system by the lungs, skin, or other channels indicates that in internal treatment the efficiency would be increased by taking small doses of the water at short intervals instead of a large dose over a long period. The therapeutics, however, of radio-active administrations are still obscure, but enough has been cited to show that at Bath there are obvious facilities for obtaining such treatment in cases where relief may be considered probable or possible. The treatment of certain cases at Bath is notoriously successful, amongst which may be included in particular chronic gouty and rheumatic affections, where a direct relationship to the radio-activity of the waters exists. Bath, in short, possesses a natural asset of undoubted value in the treatment of disease, and this fact should stimulate the authorities concerned to put their house in order, consistently with the medicinal advantages offered. The English spas languish, not because they are without real natural therapeutic resources, but because the attractive accommodation, social attractions, and *régime* of the "Kur," which are the co-essentials of success at the foreign health resorts, are not forthcoming. We should like to see our country awake to this matter and making more effort to realise the benefits of the great natural therapeutic endowments which we possess. Bath has a peculiar opportunity at the present time. The prosperity of the city is founded on the splendid traditions of its past, on the reputation of its healing waters, now enhanced in the light of modern researches. The progressive policy which we have indicated is obvious.

THE TRUTH ABOUT COCOA.

Mr. Eugen Sandow, who, as our readers know, has no claims whatever to being a dietetic authority, has been busy "warning" the public through the channels of advertisement against the adulterations of cocoa, which he states are abundantly in evidence. The warning amounts to alleging that (we use his own words) "a very large proportion of the cocoa consumed in the fond belief that it is a pure unadulterated preparation of the natural cocoa bean, in reality contains an added drug which not only is unnecessary but actually detrimental from a health point of view." More recently he has quoted our own columns as a "striking corroboration of public warning." The quotation, we find, is taken from an annotation as far back in THE LANCET as June 20th, 1896, in which the use of alkali in cocoa was dealt with. Mr. Sandow's "added drug" is "alkali." We absolutely and positively affirm that the generality of the cocoas made by manufacturers of repute and sold on the English market do not contain alkali. We do not pretend to say that alkali is not used in the manufacture of some cocoas, but even if that is the case the finished product could never contain alkali in the sense which Mr. Sandow means to convey to the public. It is true we issued a protest 16 years ago against the use of alkali in cocoa, but, as we have since been careful to point out, the inference drawn by the public that free alkali was present in cocoa was based on a misconception of analytical results. This misconception still exists in some minds, and even in the scientific and technical literature on the subject the articles may be construed to imply that cocoa contains alkali. But the explanation as to how the misconception arose is perfectly simple, and we had hoped that it had been removed by our own contributions on the subject. We refer Mr. Sandow to an article on cocoa which is much more recent than 1896, an article entitled "Cocoa, Chemically and Physiologically Considered," which appeared in THE LANCET of Jan. 7th, 1905. He will find that there was not a particle of evidence that free alkali was present in 11 cocoas purchased on the market. There was abundant evidence, on the other hand, showing that the natural organic salts of the cocoa had been materially increased as regards both some of the English and Dutch manufactured cocoas. These salts (potassium tartrate or citrate, for example) are converted into alkaline carbonate on ignition, and it is this fact which has led to the fallacious belief in free alkali being present in cocoa. Of such cocoas it would be just as true to say that they contain alkali as it would be of wood because it yields pearl-ash or potash on burning. It would be equally reasonable to say that there was alkali in claret (an acid fluid) or tea, because the ash of these contains potassium carbonate. Mr. Sandow's cocoa also contains these salts, for while it does not contain alkali any more than the other cocoas we have examined, yet on incineration the ash is found to be strongly alkaline. Our analysis of the cocoa in question[1] showed that the alkalinity of the ash was equivalent to 2·82 per cent. of potash (K_2O), which is as high as most of the cocoas we examined. As already mentioned, we are not prepared to state that alkali is not used in the preparation of cocoa. We believe on the evidence of the best authorities that in some cases it is, but we are confident in asserting that this alkali is not contained in the cocoa as it is sent into the market by well-known manufacturers. The public, we are convinced, need have no fears of Mr. Sandow's "drug alkali" being present in by far the great majority of cocoas on the English market. It is time that this juggling with the word alkali in connexion with cocoa ceased, and that false alarms should be exposed. There is no justification at all for using the word alkali except in connexion with the true oxides of sodium, potassium and so forth—the caustic alkalies—and the presence of these in cocoas is inconceivable.

THE TREATMENT OF EPILEPSY.

IN the *Archives de Neurologie* for December last M. Maurice de Fleury, of the Académie de Médecine of Paris, has published an account of his successful treatment of idiopathic epilepsy by a combination of vegetarianism with the administration of lactic ferments. Starting with the hypothesis—for it cannot be said that the author's contentions are adequately proven—that in every case of idiopathic epilepsy a degree of meningo-encephalitis exists, dating either from intra-uterine life or from the first few months after birth, and that this lesion acts as a focus of irritation when the organism is in an unhealthy state from intestinal auto-intoxication, M. de Fleury has concentrated his attention on the latter condition as *agent provocateur* of the fits, leaving bromide or similar sedative, the action of which is solely on the organic hypersensibility of the cerebral cortex, to a large extent aside. His views of the pathogeny of epilepsy, it may be remarked, receive support from the recent experiments of M. Claude and M. Lejonne, who made subdural injections of chloride of zinc in dogs, thus determining a mild meningo-encephalitis of the motor area. This was

[1] THE LANCET, Nov. 25th, 1911.

always followed by a series of convulsive attacks, which gradually diminished and finally disappeared, the animal seemingly returning to perfect health. Then, after an interval of months, the same animals received minute doses of strychnine paste in their food, with the result that they soon developed fits again and died in status, whereas control animals receiving identical strychnine doses, which had not, however, been previously injected with zinc chloride and developed meningo-encephalitis, remained entirely normal. The analogy which these carefully devised experiments present with what is so often seen in man—viz., convulsions in infancy from which complete recovery is apparently made, to be followed by the recrudescence of convulsive attacks after an interval perhaps of years—is sufficiently close to claim attention. M. de Fleury, like every physician, has been duly impressed by the frequency with which gastro-enteric disturbances are encountered in idiopathic epilepsy, and he regards these as the exciting cause of cerebral attacks, although it is difficult to specify the exact nature of the poison. It is probable that intestinal putrefaction, as evidenced by the common occurrence of indicanuria, is the main source of trouble, and accordingly the author has made systematised efforts to modify the intestinal flora. He has now given up the lacto-ovo-vegetarian *régime* as disappointing and unsatisfactory, and retains the patient on a strict vegetarian diet, with no food of animal origin. It comprises soups, farinaceous food, fresh vegetables, salads cooked or uncooked, fruit cooked or uncooked, honey, preserves, and confectionery. There is, of course, nothing novel in such a *régime*, for as long ago as 1724 Cheyne in his famous "Essay on the Gout," and many others since then have enjoined similar suggestions on their patients. Vegetarianism by itself, however, is, in the opinion of M. de Fleury, insufficient. He recommends drinking not less than one litre in the 24 hours of some sweetened mineral water, to be taken in small quantity with meals and more freely between meals. Further, he strongly advocates lactic ferments in liquid form rather than as tablets, and recommends they should not be too acid. Intestinal disinfection carried out in this way has proved eminently useful in his experience, and a number of clinical cases are quoted to bear this out.

MAGNESIUM INFILTRATION.

THE general aim of the medical profession when confronted with an illness is to be able to say with Othello, "It is the cause, it is the cause, my soul," for if the cause of a pathological condition be known the medical attendant is far on his way towards being able to remove or obviate the consequences. At varying intervals we are told that some condition is a cause in general of a multiplicity of abnormal conditions, and this multiplicity has been ascribed to such different conditions as floating kidney, uric acid, eyestrain, and the wearing of too tight a collar. It is probable that there is a modicum of truth in all these theories, for in so complicated a machine as the human organism an identical cause may produce very varying results, just as a small fragment of "dirt" may impede or destroy the working of a motor-car by giving rise to abnormalities in very various parts of the machine. The most recent theory of a general cause is that put forward by Dr. John Aulde[1] in a work entitled "The Chemic Problem in Nutrition." Dr. Aulde's theory, we gather, is as follows: That alkalescence of the body fluids and tissues is the keystone of health; that the contrary of alkalescence is acid excess; that "magnesium infiltration being the direct and immediate effect of acid excess, it follows that it must be a concomitant of all disease processes" (p. 11 *et seq.*). The way in which the magnesium acts is as an insulator, the nerve becoming electro-plated with magnesium oxide. Hence the normal nerve stimuli are inhibited and the tissues are coincidently affected so that they cannot do their proper work, whereupon a diseased condition follows. In infections this weakened condition favours the entrance of bacilli. It follows upon this reasoning that the main line of treatment in all diseases is to neutralise acid excess and promote magnesium dissociation. Dr. Aulde's theory is ingenious, but we fail to see that he offers any proof that in disease the nerves are electro-plated with magnesium oxide, and in his anxiety to support his arguments he now and then makes statements which are, to say the least of it, doubtful. His views are interesting to read, but we must add that in our opinion they must be held to be at present "Not proven."

[1] The Chemic Problem in Nutrition (Magnesium Infiltration). By John Aulde, M.D. Philadelphia: John Aulde, M.D. 1912. Pp. 410. Price $3.

THE SIGNS OF ORGANIC NERVOUS DISEASE IN SYDENHAM'S CHOREA.

THERE are not a few text-books of medicine enjoying a deserved popularity to-day in which it will be found that ordinary chorea, Sydenham's chorea or chorea minor, is classified among the functional diseases of the nervous system and placed between hysteria on the one hand and habit spasm on the other. At the same time, it has long been recognised that there are certain features in the disease, apart from its association with rheumatism, which suggest an organic basis for the affection. Occasionally such complications as paralysis, amyotrophy, trophic disturbances, and certain psychoses ensue, and these do not accord with the conception of a purely functional disorder. Yet it is only within the last decade that serious endeavours have been made to detect in chorea such symptoms and signs as are now accepted as indicative of organic disease of the cortico-spinal and other motor paths. MM. H. Grenet and P. Loubet have written an instructive little paper on the subject, which appears in the *Revue Neurologique* for Dec. 15th, 1912. There are signs both of pyramidal and of cerebellar irritation to be found in Sydenham's chorea in addition to changes in muscle tone that seem to be definitely of organic origin. It is naturally in cases of hemichorea that the examiner can best establish the presence or absence of the following signs, for he can compare one side with the other. There is nearly always hypotonia of the affected limb, say the arm, which shows itself by the lowering of the shoulder, and by the possibility of exaggerated flexion or extension of the forearm. The hypotonia is particularly well seen, as a rule, in the supinator group, the pronators retaining their normal tone. Thus if the arms are held vertically above the head, the sound limb (hand) takes up the usual position midway between supination and pronation, while the affected hand becomes pronated. Combined flexion of the thigh and the trunk, so frequently seen on the affected side in organic hemiplegia when the patient, with his arms folded, endeavours to rise from the supine to the sitting position, is frequently to be observed in chorea. Again, syncinesis or associated movement—the affected side making the same movement as the sound side—is sometimes seen in chorea. Plantar extension also, it is agreed, is by no means rare in this disease. The writers have found Babinski's sign present in 19 cases out of 74. Strümpell's sign—contraction of the tibialis anticus when the patient's attempt to flex the leg on the thigh is resisted by the examiner's hand placed on the anterior aspect of the thigh above the knee, the foot going into a position of equino-varus—is also to be noted in chorea. On the other

hand, the condition of the tendon reflexes is inconstant and variable. As for cerebellar symptoms, defects of synergy are common enough. Dysmetria—i.e., overaction of various muscular groups in such a movement, say, as that of grasping an object—has been found in chorea in a number of instances. Similarly, there is sometimes inability to execute a succession of rapid identical movements, such as rotation of the forearm from the elbow (adiadococinesis of Babinski). No doubt the presence of abrupt involuntary movements may mask these others during testing, and, apart from this, it appears that not all of the signs above enumerated are of equal value. The presence of an extensor plantar response is, of course, highly significant. The presence of hypotonia also is worth noting, although in young children there is a greater range of passive movement than in the adult. If, however, there is a definite difference between the two sides of the body, muscular hypotonia must be considered an important sign. It is less easy to assert that cerebellar disturbances characterise Sydenham's chorea. As a general rule, if the patient is able to make slow alternations of movement well on either side, but fails on one or other in rapid performance of the same, true adiadococinesis must be admitted to occur, and it is clearly a sign of organic defect. In an investigation of 74 cases MM. Grenet and Loubet found muscular hypotonia 51 times; adiadococinesis 43 times; syncinesis in about half the cases; dysmetria in 25; Oppenheim's and Babinski's signs each 19 times; combined flexion of the thigh and trunk in 16 cases; and Strümpell's sign in 9. It may be said, therefore, that in Sydenham's chorea one or other indication of pyramidal or cerebellar defect is to be found in almost every case.

THE NATURE AND CAUSATION OF BLACKWATER FEVER.

IT is a matter of common knowledge that at the present time there is a diversity of opinion among medical authorities as to the precise nature and causation of blackwater fever, some maintaining that the malady is directly related to malaria, while others contend that it is in all probability a separate disease due to an as yet undiscovered specific organism. It is, however, generally agreed that blackwater fever is only met with in persons who have either suffered from malaria or who have lived for some time in a region where they must have been exposed to malarial infection. Recently Sir William Leishman has found cell-inclusions in the blood of some patients suffering from blackwater fever, and has discussed the possible nature of these bodies at a meeting of the Society of Tropical Medicine. He suggests that they may be indications of the invasion of the cells by parasites of the class to which Prowazek has given the name of Chlamydozoa. Blackwater fever is not infrequently encountered in our own colonies in the tropics, and this fact led a short time ago to a suggestion being made to our Colonial Office by the Advisory Medical and Sanitary Committee for Tropical Africa that detailed information bearing upon the disease should be collected by the medical officers in these African colonies with a view of throwing further light upon so important a subject. In consequence of this suggestion a circular letter was despatched by the Secretary of State to the Governors of seven of our African dependencies and protectorates, in January, 1911, requesting that the principal medical officers of each should be instructed to prepare and to forward annually to the Colonial Office a special report upon the occurrence of blackwater fever and the circumstances associated with it in his colony. The particular points to which attention was to be directed were set out for the guidance and assistance of the medical officers. The first series of these reports has now appeared, having been published by the Colonial Office[1] in a special paper. Some of the reports are very interesting; but in a collective investigation of this kind some time must necessarily elapse before sufficient evidence has been accumulated upon which to base conclusions. The difference of medical opinion to which we have already referred is illustrated by some of the communications received. For example, Dr. J. Wallace Collett, acting principal medical officer of Sierra Leone, expresses his belief, the result of 17 years' experience of blackwater fever, that this disease is not directly related to malaria and is not caused by the malarial parasite. He believes that it may possibly be due to a specific microbe which as yet has not been detected, but he is inclined to regard the malady rather as a symptom of a peculiar condition of the blood in a person whose constitution has become debilitated from a variety of causes, or a combination of causes, operating upon the bodily health. Though malaria has always been in his own mind intimately associated with blackwater fever, the virus of malaria, in his opinion, has no direct or specific action in the production of the malady in question. On the other hand, Dr. A. D. Milne, principal medical officer of the East African Protectorate, states that the theory which presents itself to his mind with regard to the factor producing blackwater fever is that it depends upon a liberation into the plasma of a sufficient accumulation of some toxin produced by the malarial parasite. This latter view has received the support of some of the best known of the authorities, who have made special investigations into the disease, but further evidence obviously will be required before it can be regarded as fully proved. The accumulation of facts in the first instance, as is now being done through the Colonial Office, together with the collation and careful study of cases, seem to offer the best chances of arriving ultimately at a trustworthy decision. Meanwhile this collective investigation must in any case greatly advance our knowledge of the disease, and we have little doubt that before long a solution of the problems will be forthcoming.

COMPLETE DISLOCATION OF THE INNOMINATE BONE.

IN the *Australasian Medical Gazette* of Nov. 23rd, 1912, Dr. Thomas Fiaschi has reported a very remarkable accident—complete dislocation of the innominate bone. A boy, aged 10 years, was walking along a street bounded by a galvanised iron fence. A sudden gust of wind blew the fence down and the upper edge struck him above the left crest of the ilium. He was taken to the Sydney Hospita with an abrasion of the forehead, a wound of the upper lip, and an irregular bony projection over the left sacro-iliac synchondrosis. On trying to move the projection slight crepitus could be felt. Movements of the hip-joint were free, but any handling of the left lower limb caused pain in the region of the left sacro-iliac joint. He passed urine freely without any blood in it. On the following day he seemed fairly comfortable. A radiogram showed that the left os innominatum was detached at the symphysis pubis and sacro-iliac synchondrosis. The whole bone seemed to be elevated half an inch at the pubes and one inch at the level of the iliac crest. Under ether the displaced bone was brought down. Three assistants held the boy firmly—one at the loins and one at each lower limb, pulling apart—while Dr. Fiaschi by manipulation brought the bone downwards and forwards. He was able to make the two pubic

[1] Reports on Blackwater Fever in the Tropical African Dependencies. Presented to both Houses of Parliament by Command of His Majesty. December, 1912. London: Published by His Majesty's Stationery Office. Pp. 45, with maps and charts. Price 1s. 8d.

bones level. He then applied a double spica plaster-of-Paris bandage and a very strong pelvic band. During this manipulation, whether because the assistants got tired or the boy's muscles suddenly contracted, the bone seemed to slip partly back, for a slight inequality could be felt at the symphysis pubis. After a month the plaster was removed and a second radiogram was taken, and showed that the dislocation, though less than at first, was still present. A projection could still be felt above the left sacro-iliac synchondrosis. However, the boy seemed very well and could walk with a slight limp. Complete dislocation of the innominate bone is very rare. Recovery after it is still rarer, because it is usually accompanied by severe complications, such as rupture of the iliac vessels, bladder, urethra, or rectum. In this case the cause of the dislocation was evidently direct violence. The blow of the galvanised iron fence on the back of the left crest of the ilium in a young subject lacerated the soft ligaments. Dr. Fiaschi thinks the dislocation first took place downwards, but owing to contraction of the abdominal muscles and sacro-spinalis the bone was drawn up into the position in which it was found. It is noteworthy that no fracture was present. Dr. Fiaschi did not made a second attempt at reduction after the bone slipped back, because he had no reason to suppose that the same would not recur again. He did not resort to Lane's plates over the symphysis pubis and between the crest of the ilium and the sacrum, because he feared that it would be difficult in a little boy to prevent soiling of the wound by urine and fæces, which would have been dangerous. Moreover, he believed that even if the displacement was uncorrected little functional loss would follow. The result proved that this was correct. If the patient had been a girl he would have done more in view of the prejudicial effect which alteration in the pelvic diameters might have on labour. It appears that only about 20 cases of this dislocation of the innominate bone are on record, and little is said about treatment. Brinbach has recorded two cases. In a man, aged 21 years, the left os innominatum was displaced upwards, backwards, and outwards. Continuous extension of the lower limb was adopted. Reduction was incomplete, but he recovered with a solid pelvis and only slight lameness. In the second case the patient was a man, aged 44 years, and complete reduction was obtained by means of Schede's extension table. It took place with a characteristic snap. He was kept for a fortnight in plaster-of-Paris, and for the remainder of the month on extension. The pelvis recovered its normal shape and solidity, but neuralgic pains and atrophy of the limb remained.

THE PROBLEM OF SPONTANEOUS GENERATION.

THE experiments of Pasteur and Tyndale have for the last 40 years or so been almost universally allowed to afford proof of the impossibility, under our present conditions of knowledge, of the occurrence of abiogenesis. Dr. H. Charlton Bastian is, we believe, the only eminent man of science in this country who still holds the opposite view, and only so lately as Nov. 19th, 1912, he read a paper before the Pathological Section of the Royal Society of Medicine, in which he related experiments and defended his thesis with unwearied energy. In September, 1912, Professor Schäfer, in his presidential address to the British Association, stated with regard to spontaneous generation, "Our mistrust of such evidence as has yet been brought forward need not, however, preclude us from admitting the possibility of the formation of living from non-living substance." In October, 1912, there was issued what the author modestly calls a "petit opuscule" by Dr. H. Grasset, entitled "A Historical and Critical Study on Spontaneous Generations and Heterogeny."[1] The gist of Dr. Grasset's contention is that heterogeny and spontaneous generation, although hitherto they have been confused, are not the same. Spontaneous generation is the generation of a living organism at the expense of mineral matter or of organic (not organised) matter which is dead. This, says Dr. Grasset, has not been demonstrated, "and I know of no proofs in support thereof." But heterogeny is he production of an organised individual without parents (*dénué des parents*), the issue of organic still living matter. The major portion of Dr. Grasset's book consists of a careful and methodical survey of the doctrine of spontaneous generation and of the arguments and experiments for and against the same from the days of Anaxagoras 500 B.C. to the present day. Life, says Dr. Grasset, following the views of Mialhe and Béchamp, is physiologically a universal fermentation, and the ferment, or that which plays the part of the ferment, is the *microzyma* which is the real primordial element of animated life—that is to say, the vital molecule. Therefore, continues Dr. Grasset, in order to realise a true spontaneous generation we have only to create a microzyma, and such a creation he considers within the bounds of possibility. For already plasmogenists, especially Charlton Bastian, have created the *forms* of torulæ and microbes, and the function of a ferment has been artificially brought about by chemical or electrical methods; therefore, once we are able to unite the form and the function the problem is solved. But the method by which this union is to be accomplished is still to seek. In an addendum to his work Dr. Grasset discusses Dr. Bastian's experiments and results. He believes that Dr. Bastian has obtained living beings which are unable to resist the heat to which he subjected the solutions employed; and further, that he made no error in technique, so that external infection is out of the question. But, says Dr. Grasset, "Ch. Bastian considers this a case of archebiosis, I think it only a case of heterogeny." And his explanation is that the organisms obtained by Bastian are due to microzymæ. Whether or not Dr. Grasset's views are correct, time alone can show, but in any case his little book is a most interesting and valuable contribution to the study of a yet unsolved problem.

[1] Etude Historique et Critique sur les Générations Spontanées et l'Hétérogénie. Par le Dr. H. Grasset. Paris: Jules Rousset. 1912. Pp. 192. Price 4 francs.

BILATERAL PARALYSIS OF THE THIRD NERVE IN TYPHOID FEVER.

PARALYSIS of cranial nerves is a very rare complication of typhoid fever. At a meeting of the Société Médicale des Hôpitaux of Paris on Dec. 6th last, M. A. Lemierre, M. E. May, and M. Colet reported the following case in which bilateral paralysis of the third nerve occurred. A girl, aged 18 years, was admitted into the Cochin Hospital on May 13th, under the care of Professor Widal. A fortnight previously her illness began with pains in the left lower limb and shivering. For eight days she was completely constipated. Then she was given a purgative and an enema, and from that time there was profuse diarrhœa. During the last ten days she was prostrated and somnolent and complained of violent headache. On the fourteenth day epistaxis occurred. On admission she was pale and weak. The temperature was 103·6° F. and the pulse 96. There were no signs of typhoid fever. Some sibilant rhonchi were heard at the right apex. On the seventeenth day of the disease the serum gave the typhoid reaction, but blood culture was negative. On May 16th rose spots appeared on the flanks. The disease ran a protracted course. On June 13th, the forty-seventh day of the disease, the

temperature was 102·8°, and for the first time nervous symptoms were observed. Previously docile, the patient became bad-tempered. She refused to drink and acted like a child, complaining without cause, and lamenting if her desires were not granted. On the 15th the condition of childishness increased. She complained of violent headache and suffered from photophobia. She could not bear to be touched; there was manifest hyperæsthesia. In the afternoon ptosis of the right eyelid was manifest, and the pupil on that side was dilated, but it reacted normally to light and on accommodation. Inward rotation of the eyeball was lost and rotation upwards and downwards was diminished. Thus there were paralysis of the levator palpebræ superioris and internal rectus, and paresis of the superior and inferior recti, and the nerve supply of the constrictor of the pupil was affected. There was, therefore, paralysis of the third nerve. There was no paralysis of the left eye. Lumbar puncture was performed and yielded normal fluid. The patient became delirious, and on the 20th ptosis of the left upper lid was observed, but movements of the eye were normal. On the 21st movements of the left eye were slow and paretic, showing paresis of superior, inferior, and internal recti. The knee-jerks were absent. On the 22nd the left superior and inferior recti were completely paralysed, and the left pupil was sometimes dilated. The patient was somnolent and replied with difficulty to questions. The temperature was 103·1°. On the 23rd there was difficulty in swallowing; milk could be taken only in small mouthfuls, and some of it flowed back. On the 24th there was complete paralysis of both third nerves. On the 25th the patient died comatose. A necropsy was not obtained. Few cases have been recorded of ocular paralyses in typhoid fever. Hervieux described paralysis of the left third nerve in a fatal case of typhoid fever.[1] Lloyd published a case of isolated paralysis of the sixth nerve,[2] and Cormack described the same lesion with paralysis of all four limbs. Difficulty of deglutition in relation with paralysis of the soft palate is not so rare. It may occur with multiple paralysis of the limbs, producing more or less exactly "Landry's paralysis," or it may be accompanied by laryngeal paralyses or dysarthria. Cranial paralyses in typhoid fever are probably not always due to the same cause. Pathological observations on the subject are still rarer than clinical. It is known that typhoid infection may give rise to cerebral hæmorrhage, which is, no doubt, sometimes a cause.

A STUDY OF THE BLOOD IN A CASE OF SEVERE HÆMORRHAGE.

THE opportunities for studying the blood after severe uncomplicated hæmorrhage are not very frequent. Hence the importance of the following case reported in the *Boston Medical and Surgical Journal* of Dec. 5th, 1912, by Dr. J. Earle Ash from the Laboratory of the State Hospital for the Insane, Norristown, Pennsylvania. A young woman suffering from a functional psychosis was seized with pain in the epigastrium and vomiting. At the same time a vaginal discharge of thick, brown gelatinous mucus appeared. In about 12 hours the pain became generalised over the abdomen, and there was considerable distension. The pulse became small and rapid and she was very pale, the mucous membranes appearing practically bloodless. There was no elevation of temperature, the abdomen was not rigid, and only slight general tenderness could be elicited. In spite of the history, which seemed to discredit the possibility of pregnancy, a tentative diagnosis of ruptured ectopic pregnancy was made. The abdomen was opened about 24 hours after the onset of symptoms, much clot was removed, and ruptured right tubal pregnancy was found. 1·5 litres of saline solution were administered by the bowel, and uninterrupted recovery followed. The amount of the hæmorrhage could not be exactly estimated, but it considerably exceeded a litre. Just before the operation, about 24 hours after the onset of hæmorrhage, the leucocytes numbered 40,000. After the operation a series of blood examinations were made. Eighteen hours after the operation the hæmoglobin was 25 per cent., the erythrocytes numbered 825,000, and the leucocytes 24,400, of which 92 per cent. were polymorphonuclear neutrophiles. Other examinations were made 24 hours, 2 days, 2½ days, 3 days, 3½ days, 6 days, and 2 months after operation. The amount of hæmogobiln was respectively 25, 28, 30, 28, 30, 30, and 75 per cent.; the erythrocytes numbered 870,000, 1,830,000, 1,740,000, 1,950,000, 1,800,000, 2,550,000, and 4,310,000; the leucocytes 18,600, 15,200, 14,000, 12,600, 8000, 11,800, and 6800; and the polymorphonuclears were 91, 87, 81, 72, 82, and 58 per cent. Analysis of the facts observed showed the following: (1) High leucocytosis after the hæmorrhage which diminished consistently and fell to normal on the fifth day after the onset; (2) an increase in polymorphonuclear neutrophiles; (3) a low percentage of transitional forms in the early counts (1 per cent.); (4) an extremely low number of erythrocytes with absence of nucleated cells; (5) a low percentage of hæmoglobin which persisted for several weeks. Leucocytosis following acute hæmorrhage was described by the older writers such as Virchow. The following figures have been given by more recent writers; 41,000 leucocytes one hour after severe hæmorrhage, dropping to 14,000 in five days; 32,600 following hæmorrhage from cancer of the uterus; and 26,500 in hæmorrhage due to gastric ulcer. The extent of the leucocytosis is in proportion to the severity of the hæmorrhage. There does not appear to be any completely satisfactory explanation of the leucocytosis. It may be due to concentration of the leucocytes already present in the blood or to the discharge into it of cells held in reserve to meet such an emergency. Most observers have found numbers of nucleated red cells, except in cases terminating unfavourably. It has even been claimed that when the red cells fall below a million with absence of erythroblasts the case is always fatal. The one now recorded is an exception. The restitution of the number of erythrocytes to normal is much slower than the disappearance of the leucocytosis, and generally takes from 16 to 20 days. The development of hæmoglobin is still slower, the new erythrocytes being poor in this substance. This is shown in the figures given above.

[1] Union Médicale, 1858.
[2] Revue Neurologique, 1909, p. 1233.

THE King has given His Majesty's Royal licence and authority to Llewellyn Powell Phillips, M.D., B.C. Cantab., F.R.C.S. Eng., Professor of Medicine at the Medical School, Cairo, to accept and wear the Insignia of the Third Class of the Imperial Ottoman Order of the Medjidieh, which decoration has been conferred upon him by His Highness the Khedive of Egypt, in recognition of valuable services rendered.

Professor Arthur Keith, M.D., has been elected President of the Royal Anthropological Institute of Great Britain and Ireland.

UNIVERSITY OF LONDON: KING'S COLLEGE.—A course of four lectures on Recent Advances in Chemical Physiology and Pathology will be given by Dr. Otto Rosenheim in the Physiological Laboratory, King's College, London, on the following Monday afternoons at 4.30: Feb. 3rd, 10th, 17th, and 24th. These lectures are free to all medical students in London medical schools, and to all internal students of the University of London, and to medical men on presentation of their cards.

NECESSITY OF A BETTER CLASSIFICATION OF EPILEPTICS.

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THE disastrous and pernicious custom of mixing up sane epileptics with imbeciles and epileptic lunatics, not only in the same habitations but also in the same literary and mental categories, is one that should cease.

Until December, 1888, when the first colony for sane and educable epileptics was established at Maghull, epileptics in this country whose relatives and friends could not look after them drifted to the imbecile or lunatic wards of asylums and workhouses, and certificates of insanity or of unsound mind containing the word "epileptic" did not require much other evidence to render them valid. The striking symptoms of a fit were quite sufficient to place on a par mentally and physically the sane epileptic, the insane epileptic, and the epileptic imbecile. It has often happened in the past that an epileptic, who appeared to the alienist under whose care he was to be sane, has been admitted for some action supposed to be a mad one by frightened or interested relatives or friends. Such a history, together with the alienist's knowledge of how many insane epileptics or imbeciles he has had under supervision, naturally will lead to the conclusion that although the state of mind of the particular case was very fair, yet, as he was still an epileptic and liable to repeat the deed for which he had been sent to the asylum, he could not be discharged. Besides, the alienist would reflect that, according to his knowledge of the disease, time would soon bring about the state of dementia to which, according to the prevalent opinion, all epileptics are liable, and therefore it would not be wise to take any risks.

With a better knowledge of epilepsy it is horrible to contemplate the condition of many poor epileptics in the past when there was no redress and no help, and when the effects of their environment often produced that dementia which the alienist ascribed to the disease. Our experience has amply proved the prevalence of this erroneous conception of epilepsy amongst all classes of society at the present time. For instance, when we first established our colony at Maghull the popular idea amongst the native population there was that the inmates of our homes were mad, and they wished walls built all round the place lest the sight of our patients working in the field should upset the course of nature in the observers. It was only when our patients beat the youth of the village at games that they were looked upon as rational beings. When we first placed a number of our patients under the charge of our farmer to dig up a lawn, his good-humoured tolerance of our belief that such patients could work was amusing to contemplate, and certainly the result of his management of them confirmed the bailiff's impression. When it was proved that they could and would work, his belief in their sanity took root and flourished. The same prejudice had to be eradicated in turn from the minds of all our officials. Again, when we established our school even the education authorities did not look upon the teaching seriously. They insisted strongly on drill, kindergarten work, and other interesting playthings, but the teaching of the "three R's" was preposterous in their sight. They went on the supposition that the children were all imbeciles and idiots and that the "three R's" were useless and impossible. It was only by examining the schools ourselves and insisting on progress in reading, writing, &c., that we were able to resist the powerful influence of the Board of Education, an influence due to a false conception of the mental capacities of sane epileptics. Paradoxical as it may seem, the Board insisted on highly paid and highly certificated teachers who were to spend the time on trifles and inanities that were looked upon as puerilities by most of the pupils.

"Psychic equivalents" of epilepsy; mistaken relationship.—The symptoms of epilepsy being so striking, it is not surprising that anything which occurs to an epileptic, connected or not with a fit, should be considered as belonging to the disease. Thus, if an epileptic becomes maniacal, it is called "epileptic mania"; if he be the subject of delusions unconnected with a fit, it is called a "psychic equivalent" of epilepsy; and if an epileptic—or, indeed, anyone who has ever had a fit—commits any mad act most alienists would ascribe that mad act to the influence of epilepsy and not to a temporary insanity unconnected therewith. My contention is that these "psychic equivalents" point to insanity as a companion disease, and I hope to be able to show that patients who exhibit "psychic equivalents" often become insane, and that ordinary sane epileptics do not show "psychic equivalents" and do not tend to dementia or insanity. That alienists should associate epilepsy with insanity and imbecility, and believe in the frequent termination of epilepsy in dementia, was, no doubt, often justified by the class of cases received by them; but that modern superintendents of colonies should still share such an opinion is the more surprising when we have institutions for sane epileptics. For instance, Dr. W. L. Shanahan, the medical superintendent of Craig Colony, U.S.A., in a lecture says: "*Epilepsy is a disorder leading to dementia.*"[1] This is an opinion not by an "alienist," but by a superintentendent of an epileptic colony to which are sent not only many imbecile epileptics, but also many sane epileptics; no doubt the degeneracy of the imbeciles may have confused the issue and caught the attention more than the permanence of the sanity of the sane. However this may be, what I am prepared to prove is *that sane epileptics do not tend to dementia to any serious extent.* To do this I have analysed our experience at Maghull, and in order to do so as effectually as possible I have only considered patients who have been under our care for three years and upwards. This excludes all temporary cases, and consequently all cases of which the issue is doubtful owing to insufficient time. The numbers available for our purpose are shown in the following table:—

TABLE I.—*Epileptics who have been Inmates of the Homes at Maghull for over Three Years.*

Essential, sane epileptics.	Epileptics with "psychic equivalents."	Imbeciles of various degrees.
256	19	84

When we opened our colony we intended to take only sane epileptics, but the natural tendency of parents and guardians at first was to send us only the worst cases such as imbeciles and troublesome epileptics. As we were undertaking a comparatively new work we had to ascertain how far the colony treatment would benefit the more imbecile cases and how far the troublesome ones would be influenced for their good by the life and peace we offered them. Our staff worked enthusiastically to develop the imbecile and to preserve, and if possible to restore, the balance of the mentally affected, and hence the above divisions of our patients, and hence our experience with cases which we did not expect to have, and which we do not now receive for obvious reasons. We do not express opinions, but refer with confidence to Table II., which shows the length of time these patients have been under observation. None of these patients have ever shown "psychic equivalents." Their minds were sane, their conduct rational, although their intellectual capacities varied from clever accomplished individuals to others who might be called feeble-minded.

TABLE II.—*Time under Observation of 256 Sane Epileptics.*

No.	Time.	No.	Time.	No.	Time.
61	over 3 years.	12	over 10 years.	3	over 17 years.
29	,, 4 ,,	6	,, 11 ,,	4	,, 18 ,,
26	,, 5 ,,	10	,, 12 ,,	1	,, 19 ,,
19	,, 6 ,,	14	,, 14 ,,	1	,, 20 ,,
17	,, 7 ,,	1	,, 15 ,,	3	,, 22 ,,
16	,, 8 ,,	9	,, 16 ,,	1	,, 24 ,,
23	,, 9 ,,				

Average time under observation nearly 7 years. Only 5 of these patients deteriorated and may be said to have become subjects of dementia:—(1) A woman who had been sent away for dementia 17 years after she became an epileptic; (2) a man who became demented and unmanageable 17 years after he became an epileptic; (3) an emotional girl who became gradually a troublesome dement 23 years after becoming an epileptic; (4) a troublesome girl who became demented 22 years after the onset of epilepsy; (5) a youth who seven years after the onset of epilepsy became demented and quarrelsome. Total dements out of 256 cases, 5, or 1·96 per cent. This does not show a strong, or, considering the time occupied in the change, a rapid

[1] Lecture at Fordham University School of Medicine, New York City (International Clinics Series).

tendency to dementia in sane epileptics. Twenty of the 256 were what might be called feeble-minded persons—i.e., persons who possessing all their faculties but without any great mental force, yet were not such as we could apply the term imbecile to. Not one of these deteriorated to any appreciable extent, although they were with us longer than the others and had every opportunity as far as time was concerned to show any impairment in their work or mental condition.

Patients with "psychic equivalents of insanity."—The history of these patients tells a very different story. There were 19 patients in this class. Their symptoms varied, and we will refer briefly to the nature of the equivalents which were always periodical: Delusions of poisoning; violent and apparently uncontrollable fits of temper unconnected with attacks; "fits of melancholia"; periodical outbursts of degraded or profane language; periodic efforts to escape by secret and difficult methods when doors were open; sudden, violent, and unprovoked attacks on teachers, nurses, or companions; recurring delusions about religion, &c. To mention two individual cases in detail. One young girl would be amenable to order and discipline for several weeks. She would perhaps be employed in sewing with several others when she would rise deliberately from her place, walk composedly across the room, and pinch a patient so severely as nearly to nip the piece out. She would then resume her seat, and on being taken to task would be very sorry, apologise, and promise amendment, but she repeated the act again and again, and no treatment could affect the impulse. She had to be removed. Another girl, a child about the same age (12 years), would periodically attack the nurses or her companions, pull out their hair or scratch their faces, and, although very sorry in the intervals and very loveable then, no training or warning could prevent their recurrence. Every one of these 22 patients with one exception became worse mentally and had to be removed, although "no stone was left unturned" in our efforts to save them. The majority were afterwards removed by their friends to lunatic asylums. The one exception was an adult woman who had periodical mental attacks, or "psychic equivalents," but who died in "status." Otherwise I have no doubt she would have ended her life in an asylum.

I now regard these not as "psychic equivalents" of epilepsy, but as prodromata or as premonitory symptoms of insanity, and the results—viz., the gradual development of insanity and their final removal to asylums—prove that, practically at least, my view that they are insane is correct. Table III. shows how long and with what success we were enabled for years to keep such cases out of a lunatic asylum, but every case had to be removed finally except one, and she went to her grave instead. It has not often occurred hitherto that we have had such an extended record of patients with "psychic equivalents." Our interest in such cases was always great, but we had no idea until lately that the prognosis was so gloomy. Until I studied these cases I shared the common view of "psychic equivalents" of epilepsy. Since looking up the records I regard "psychic equivalents" as forerunners of insanity.

TABLE III.—*Time in Homes of Patients with "Psychic Equivalents" before Removal became Necessary.*

No.	Time.	No.	Time.	No.	Time.
1	2 years.	1	9 years.	1	14 years.
4	3 ,,	2	10 ,,	2	15 ,,
2	4 ,,	1	11 ,,	1	16 ,,
1	6 ,,	1	13 ,,	1	18 ,,
1	7 ,,				

None of these cases were congenital epileptics.

Alleged causes of epilepsy in those suffering from so-called "psychic equivalents."—In two cases the children were three years of age, and were said to have suffered from sunstroke. In another case the attacks began at three years of age without any cause. In one case, aged 5, the alleged cause was rheumatic fever. Three were 8 years old at the time of the onset of the fits, and in two of them the alleged causes were the extraction of a tooth and a fall. In the remaining 11 cases epilepsy began at from 12 to 18 years of age, and the alleged causes were falls (2 cases), and menstruation (1). No definite causes were alleged in the remainder. In only two cases was there a history of epilepsy or other nervous disease in the family.

TABLE IV.—*The Effects of Time on Imbecile Epileptics.*

Results of Prolonged Treatment of 84 Imbecile Epileptics.

Deteriorated.	Improved or remained *in statu quo*.
53, or 63·8 per cent.	31, or 36·8 per cent.

As to our epileptics who were more or less imbecile on their admission to the homes, the above table shows that we have a different tale to tell from that which we have already told about the sane epileptics, but not quite so bad a story as that which we have also told about those cases with "psychic equivalents." These patients when admitted were imbecile to a moderate extent, but all had distinct mental defects. In regard to their habits, they might be said to belong to the better class of imbecile, so that we were able to keep them until they became a nuisance, and the next table shows how slowly the degradation took place. The helpless, hopeless imbeciles were rejected on application, or, if they appeared to be worse than we expected, on being presented for admission they were sent back home as soon as convenient. Those whom we received were taught and trained by enthusiastic officers, and every effort was made to improve their brains and to restrain the violence of the epilepsy.

The degeneration was a gradual process, as the following table (Table V.) proves. This table shows the number of years of their stay in the homes before they became absolutely unsuitable, and there was sometimes great reluctance on all sides to break the bonds that bound the nurses and the patients together.

TABLE V.—*Time 53 Imbecile Epileptics were kept at the Homes before Deterioration Rendered them Quite Unsuitable.*

No.	Time.	No.	Time.	No.	Time.
9	3 years.	4	8 years.	2	14 years.
6	4 ,,	4	9 ,,	3	15 ,,
7	5 ,,	4	11 ,,	1	16 ,,
3	6 ,,	4	13 ,,	1	17 ,,
5	7 ,,				

The next table shows that 31 imbecile epileptics did not degenerate, and gives the time these patients were under observation.

TABLE VI.—*Showing how long 31 Imbecile Epileptics were kept without Deterioration or were Improved by Treatment.*

No.	Time.	No.	Time.
2	3 years (1 still with us)	4	9 years (3 still inmates)
2	4 ,, (both still with us)	1	12 ,, (still an inmate)
5	5 ,, (1 still with us)	1	13 ,, (,, ,,)
4	6 ,, (3 still inmates)	1	16 ,,
3	7 ,, (2 ,, ,,)	1	19 ,, (still an inmate)
7	8 ,, (6 ,, ,,)		

Of these patients 21 are still in the home, several of whom have improved very much, but the majority retain much the same mental conditions as when admitted. None have deteriorated, although the average time under observation was 7·4 years, quite sufficient time for degeneration to set in if epilepsy always lead to dementia.

We have tabulated the ages at which the epilepsy began in all these imbecile cases, so that we might compare them.

TABLE VII.—*Age at which Epilepsy first Appeared in 53 Imbecile Epileptics who Deteriorated.*

No.	Age.	No.	Age.	No.	Age.
12	Birth.	5	7th year.	1	16th year.
2	1st year.	1	8th ,,	1	17th ,,
3	2nd ,,	4	9th ,,	2	18th ,,
5	3rd ,,	2	12th ,,	2	20th ,,
1	4th ,,	1	13th ,,	1	21st ,,
2	5th ,,	1	14th ,,	1	48th ,,
4	6th ,,	2	15th ,,		

In eight cases there was evidence of hereditary disease in the family history.

TABLE VIII.—*Age of Onset of Epilepsy in 31 Cases of Non-deteriorated or Improved Epileptic Imbeciles,*

No.	Age of onset.	No.	Age of onset.	No.	Age of onset.
11	Birth.	2	5th year.	2	9th year.
3	1st year.	1	6th ,,	1	11th ,,
2	3rd ,,	4	7th ,,	1	13th ,,
2	4th ,,	1	8th ,,	1	18th ,,

In 5 of these non-deteriorated cases there was evidence of hereditary disease.

We have not much evidence of the mental condition of the patients before the onset of the epilepsy. In one case the child was said to be very bright and precocious in her school accomplishments. With the onset of convulsions her knowledge all disappeared, and when she came to us she had to be retaught the days of the week. Very slow progress was being made when she died in "status."

In concluding this part of the subject I think it may be considered proved: First, that healthy, sane epileptics under the conditions of a normal life in a modern colony do not tend to dementia, and are not liable to so-called "psychic equivalents" of epilepsy. Secondly, that where "psychic equivalents" occur there is also a tendency to insanity in the future. Under the conditions of a normal life the tendency is kept in check, but as time advances, in the great majority of these cases, the tendency becomes stronger and stronger, and most of the cases become unmanageable and drift to an asylum or to the insane wards of a workhouse. Thirdly, that imbecile epileptics show a tendency to dementia, 63 per cent. of 84 cases becoming demented after being under observation for long periods of time varying from 3 to 17 years, or an average of 7 years. On the other hand, 36 per cent. of the 84 cases, or 31 imbecile epileptics who were under observation for similar periods of time and under quite similar circumstances, did not change for the better, except in a few instances, after an average period also of 7 years.

We have considered the question whether amongst all these patients there were any characteristic differences in the nature of the attacks, the age of onset of the disease, or in hereditary influence, but so far we have not been able to detect any. The administration of bromides to imbecile epileptics appears to us to be much more harmful and much more likely to bring about dementia than is its administration to sane cases. Again and again, when dementia threatened, we have temporarily arrested its onset by stoppage of all bromides and by attention to the general health.

Confusion of ideas in regard to the character of sane epileptics.—One writer quotes an authority for saying that the most characteristic phenomenon of epilepsy is not convulsions, but periodical emotional disturbance characterised by sudden depression, or excitability, or fear, home sickness, suicidal desires, and marked mental confusion. The same writer also quotes an opinion on the epileptic character as "one compounded of egotism, obstinacy, deceit, hypocrisy, family pride, and reckless, quarrelsome excitability, recurrent outbreaks of temper accompanied by morbid suspicion and wanton destructiveness." Our experience at Maghull, except in the case of the patients with "psychic equivalents," whose character has already been described in this paper, does not lend any support to the truth of the description of the epileptic character just given.

The most characteristic phenomena of essential epilepsy are convulsions, and the mental and emotional disturbances are only such as one would expect in a person subject to epilepsy. Suppose the reader to imagine himself an epileptic, liable to fall down unconscious at any moment and in any place, would he not be likely to suffer from times of depression, excitement, or even fear, without such symptoms being considered part of the disease? I do not know what is meant by home sickness, but if it refers to institution treatment, it is not more in evidence amongst our patients than amongst boys at a public school. Suicidal desires, marked mental confusion, egotism, obstinacy, deceit, hypocrisy, family pride, and reckless or quarrelsome excitability, recurrent outbreaks of temper accompanied by morbid suspicion and wanton destructiveness, are not symptoms at all of simple, essential, sane epileptics. I have quoted these supposed characteristics of epilepsy to matrons at Maghull, who have had charge of households containing from 40 to 60 epileptics for many years, and their remarks were not complimentary to the intelligence of the writer who could describe such symptoms as the general characteristics of their past and present inmates. Our homes at Maghull are all managed by ladies, and have been so managed since their foundation 24 years ago. Were the above statements not a libel on a deserving class, already hopelessly handicapped by one of the most dreadful diseases that afflict humanity, would it be wise or possible to do without the assistance of the sterner sex in dealing with them?

Character of sane epileptics.—Ordinary sane epileptics are subject to the same feelings and tempers as other people. They are specially dependent on relatives, friends, nurses, and attendants owing to their infirmity: they are attracted by sympathy and kindness, and are repelled by want of sympathy and unkindness, more so than ordinary individuals. They are very responsive to justice and fair play, and appreciate fair dealing acutely, like people to whom it has once been a stranger. To appreciate this point we must place ourselves in the epileptic's place and look upon matters from the epileptic's point of view. We shall then see that there are many pre-epileptic or post-epileptic events which an epileptic strenuously denies knowledge of because he knows nothing of them, does not even know that he has fits, or realise what a fit is. He is often surrounded by lies from his childhood upwards through a mistaken notion that any lie that will keep him in ignorance of his epilepsy is justifiable, forgetting that the patient has a brain and soon finds out that he is being deceived and that there is a mystery somewhere which he cannot fathom. When he reaches a colony the mystery is solved. He neither "dies" nor "goes mad," as ignorant relatives would have us believe he would if he knew the truth about himself, but instead he settles down to make the most of the large portion of life still left to him. He recognises his limitations, realises the dangers of his position, and knowing that he is safe in sympathetic company he can enjoy his life when he is relieved of the incubus that preys upon him, and, secure in the company of his equals, the conversation becomes unrestrained and spontaneous, and quite on a level with that of the class of society whence the patients are derived.

In conclusion, I would try to impress on the authorities that sane epileptic children can be taught the foundation of all knowledge—viz., reading, writing, and arithmetic—with little more difficulty than with ordinary healthy children. Arrangements must be made for the fits, but these only occupy a small portion of their time, and the greater part of it can be utilised for ordinary school work. The idea that these children cannot be taught to read, to write, and to do arithmetic, or that it is unnecessary or useless to teach them these things, is a wrong one. Education is a therapeutic remedy of great value; it strengthens the brain, tends to develop growing centres, and produces habits of perseverance, of attention, of self-control, of initiative, and of determination. If the school authorities give out the impression that epileptics cannot be taught, why should we have highly trained and certificated teachers, when kind-hearted women who know some needle work and some drill would do as well, and the present talent now wasted could be utilised elsewhere?

Epileptics enjoy the pleasure of reading probably as much as other people. It was stated in my presence some time ago by the superintendent of an epileptic colony, a colony certainly where a good many feeble-minded and more or less imbecile epileptics are admitted, that it is no use teaching epileptics to read, that they rarely use the accomplishment, or if they do appear to read, they do not absorb the knowledge or even know what they are reading about. I have ascertained the facts as regards the same epileptics at Maghull. The various matrons gave me the numbers of those who are in the habit of reading books in their leisure hours, and who are in the habit of discussing literary questions with each other. Amongst 171 male patients, 79 were fond of reading, and occupied their leisure hours in this way. Many of the others read spasmodically, but enjoy games and other methods of passing the time better. Amongst 140 female patients only 26 were fond of reading, or altogether 105 out of 311, or 33·7 per cent. We must remember that the leisure of the women was more likely to be utilised in sewing and embroidery, and where the majority took an interest in such feminine employments it required a strong penchant for a book in the 26 to choose that method for passing the time when, for example, love of dress and other instincts called them instead to the use of the needle. Besides, we do not encourage poring over undesirable books, and the report of the matrons gives the state of affairs without any desire to vary the records one way or the other.

THE REPORT OF THE MEDICAL OFFICER TO THE BOARD OF EDUCATION.

The Development of School Health Administration.

THE fourth annual report of Sir George Newman, the chief medical officer of the Board of Education, gives account of the work of education authorities in England and Wales during the year 1911 so far as it relates to the health of children attending elementary schools. The record of the year marks the development of local administrations for safeguarding the health of the children, and shows that the transfer of this work to health authorities is bearing fruit. The appointment of the medical officer of health as school medical officer, which we supported in these columns, is an important principle in this relation, and we learn with pleasure that in 303 areas in which schemes were approved by the Board this course was adopted in 243. Sir George Newman now states that "between the public health and school medical services, with hardly an exception, some degree of effective coördination, either personal or administrative, was the rule."

Sir George Newman discusses the whole subject of the medical care of the school child in different sections of his report. He describes the action of local authorities in examining the children in the schools and in providing remedies for the defects in their health which are found by this examination, he states the proportions in which the children in this country were found to be affected, and in describing the several measures of amelioration which local authorities have adopted he indicates those which have been found to be most productive of good. In the establishment of a new administrative system throughout the country no one could be prepared to indicate at the onset in every detail how it should be formulated. Hence the Board of Education has wisely allowed some latitude in the action of local authorities. Now a considerable experience is available, and Sir George Newman is able to indicate the object which should be aimed at and the direction in which local authorities would do well to proceed. The report is therefore of the utmost value in promoting the development of the school health administration on lines which are best calculated to attain the desired result.

Tuberculosis: the Number of Children Affected.

Of the various special subjects which are dealt with in the report we may select for comment in the first instance that of tuberculosis of children. Sir George Newman shows in a table the death-rate from all causes and from tuberculous diseases in England and Wales at the several ages in the years 1907–10, and he points out that the comparatively high rate of mortality from tuberculosis under five years of age seems to indicate that infants and young children are extremely susceptible to the disease and withstand it badly. He evidently accepts the view that the safety of the child from injury from tuberculosis is more dependent on the child's powers of resistance than upon escape from exposure to infection, for he places the three main factors which determine whether a child becomes infected in the following order—(*a*) the influence of heredity and predisposition, (*b*) the influence of environment, and (*c*) the presence of infection. He urges that it must not be assumed that because a child has suffered from some form of tuberculosis his constitution has necessarily been irretrievably injured, but that under suitable conditions he may become and remain a healthy person. This is the keynote to the advice which is given in the report. Whatever the condition, the best must be made of it. The question is what the public authority can do, and this is well answered in the subsequent pages.

Pulmonary tuberculosis is comparatively rarely found in children or, as Sir George Newman perhaps more correctly puts it, occurs in a form which can be rarely diagnosed. In the examination of the school children the diagnosis is necessarily based mainly on symptoms and physical signs, but inoculation tests, X ray examinations, and bacteriological tests may also be employed in some cases. In a table which is included in the report the proportion of children is given of those found to be suffering from phthisis and from other forms of tuberculosis in a number of counties and towns. These figures are based upon the routine examination of children in the schools, and study of them necessarily raises question as to whether they must be regarded as comparable. Thus, we find that in Liverpool the percentage of children found to be suffering from phthisis was 0·313, while in Kingston-upon-Hull examination of nearly the same number of children only gave a percentage of 0·072. It is difficult to understand so wide a difference. In Liverpool we learn that cases have been referred to the chest hospital for confirmatory diagnosis, where use has at times been made of the von Pirquet test, and it may be that reference to the chest hospital, with the application of this test, has materially affected the figures. It may be, moreover, that the Liverpool child population has a larger proportion in it of children of Irish race than that of Kingston-upon-Hull, and, if so, that the figures are affected thereby. Curiously enough, the proportion of the children suffering from "other forms of tuberculosis" are in the opposite direction, for while only 0·061 per cent. of the Liverpool population are thus affected, as many as 0·717 per cent. are found to be affected in Kingston-upon-Hull. We should welcome inquiry into these remarkable results, which certainly need explanation. In a few cases medical officers have stated the signs upon which they personally place most reliance, and Sir George Newman points to this practice as one deserving of imitation.

Records of Tuberculous Children.

It is satisfactory to learn that the following-up and re-examination of tuberculous children seem to have been more fully and carefully carried out in 1911 than in previous years, and that in a number of cases special records have been kept of such children and a fairly comprehensive account given of them. Thus, in some areas a register is kept and the subsequent history of the child can be obtained. Records of this kind would be useful in connexion with the study of tuberculosis occurring still later in life, and if the medical practitioners, who have to treat cases of this disease in persons of adult age, had access to them, a more complete history of these cases would be able to be obtained. We can indeed foresee the possibility of a *dossier* eventually existing which would throw light on the behaviour of tuberculous disease.

In some districts the records include an account of the family history. Dr. T. W. Wade, we are told, inquired into this subject in three classes of children: (1) mal-nourished children; (2) tuberculous children; and (3) children taken at random; and he found that a near relative had been affected with tuberculous disease in 23·5 per cent. of mal-nourished children, in 30·6 per cent. of tuberculous children, and in 8·9 per cent. of the others. Mention is made of a few other observations of interest, and although they do not as yet afford sufficient basis for precise inferences, they show that the school medical officer has opportunities for investigations of considerable importance, which we trust will eventually be more largely utilised.

The Treatment of Tuberculosis in School Children.

The report shows that there has been no material change during the year in the arrangements made for the treatment of tuberculous children. Education authorities, as such, can provide open-air schools, but they have few opportunities of sending children to institutions for treatment. It may be hoped that this gap in the provision for treatment of tuberculosis in children in the English population will eventually be met by the action of county councils and county borough councils in connexion with the general provision they are making for the treatment of tuberculosis in sanatoriums. In all probability provision for the young population would be more productive of good results than that for persons of riper age, when perhaps more conspicuous disease has developed. It is here that the experience of county councils as education authorities can be utilised by them as public health authorities. The question they may well consider is whether it may not be possible by larger provision for the young to obviate the need for as much provision for adults as it might otherwise be incumbent upon them to make. This is an important question, and needs to be considered in connexion with that of the results which may be derived from the proper treatment of children in the home when the conditions provided therein are good. This subject is discussed later in the report.

In connexion with the treatment of children for tuberculosis, Sir George Newman gives a brief account of some

of the chief institutions at which tuberculous children are received, and he says that the provision is extremely limited and altogether insufficient for those needing institutional treatment. These institutions he divides into four groups: (1) open-air hospitals or sanatoriums which do not provide education in schools certified by the Board; (2) those which make such provision; (3) day schools for phthisical children; and (4) schools for physically defective children which, although not intended for children suffering from tuberculosis, serve to accommodate a number of children who have been affected with surgical tuberculosis, have recovered from the disease, but are left with a permanent deformity which prevents them from attending ordinary schools. The large proportion of crippled children who owe their defect to tuberculosis may be understood from the results of the examination by Mr. R. C. Elmslie of 3275 physically defective children in London, of whom 49 per cent. suffered from tuberculous disease.[1] The total amount of accommodation which Sir George Newman says now exists is about 1350 beds, of which 350 are available for children with pulmonary tuberculosis and 1000 for children suffering from other forms of tuberculosis.

The Provision of Additional Accommodation.

Sir George Newman, in anticipation of the provision of additional accommodation, discusses what is immediately necessary if the disease among children is to be grappled with in a radical way. He thinks it is impossible to contemplate the provision of residential sanatoriums, even for the majority of mild cases, in view of the cost it entails and the period of time it requires to be continued. He writes that pulmonary tuberculosis in children often appears to be relatively slight in character and degree, and that when the home conditions are good, regular and prolonged attendance at an open-air day school will often bring about a restoration to health. If a child is able to make a good recovery when still subject to the influence of the environment in which it must necessarily subsequently live, the chances are in favour of the disease being permanently arrested, but that children who are more acutely ill or whose home circumstances are less satisfactory, may require a short course of institutional treatment followed by attendance at an open-air school, while others, again, may fail to respond satisfactorily to anything but prolonged institutional conditions.

Sir George Newman's views on this subject deservedly carry great weight. They indicate how much may be done by an observant authority in selection of cases for one or another class of treatment both in respect of the results which are attained and in the economical expenditure of public money. The opinion is expressed of the value of the additional 250 beds for children suffering from pulmonary tuberculosis recommended by the Departmental Committee on Tuberculosis, and it is advised that pulmonary and surgical cases should be dealt with in separate institutions, and that sanatoriums should be erected as cheaply and simply as possible.

Sir George Newman insists upon the necessity of treatment of tuberculous affections of the bones and joints in open-air institutions, while, he says, glandular enlargements and minor tuberculous affections do not often require sanatorium treatment. This open-air treatment should commence at an early stage, and usually requires to be continued for 18 months or two years or longer. Under these conditions good results may be anticipated, but not otherwise. He attaches more importance to increased accommodation for cases of this kind than for cases of pulmonary tuberculosis, and he quotes the opinion of the Departmental Committee that an additional 2000 beds is needed for children of this class. The accommodation, he recommends, should be in the country or at the seaside; the provision of open-air sheds or of ordinary open-air wards will depend to some extent upon the form of treatment adopted, and on the views of the responsible medical officer. An X ray installation, a laboratory, rooms for the application of splints and facilities for the manufacture of splints should be included in the equipment, and, above all, he insists upon the efficiency of the nursing staff as of the highest importance. In these institutions education is not to be neglected, and arrangements should be made for this purpose for children after the acute stage of the disease is over, whereby, if well enough, they may receive suitably graded teaching in an open-air school or shed, or otherwise in the wards. Such arrangements need the approval of the Board of Education to qualify them for the additional education grant.

The provision of additional open-air school accommodation is strongly urged by Sir George Newman, and this, he says, should be continued throughout the winter as well as through the summer. He regards the supply of a substantial midday meal as essential, and thinks it most desirable that breakfast and tea should also be given. Arrangements should be made for a long rest and, if possible, sleep during the day. The physical condition of the children should be carefully watched, and their school work planned with indications afforded by their general health. Their weight, pulse, and temperature should be recorded, the last twice a day. Sir George Newman also expresses the opinion that "night camps" should be established, if only for use in summer, none of the open-air schools now providing sleeping accommodation.

Questions of Administration.

In the pages of the section of his report which he devotes to the position of the local education authorities in regard to the treatment and care of tuberculous children, Sir George Newman points out that the requirements of notification, the provision of £1,500,000 of the Finance Act of 1911 for the cost of construction of sanatoriums, the provision of sanatorium benefit by the National Insurance Act, the provision of a grant towards the cost of treatment in institutions of non-insured persons, and the Board of Education grant in aid of medical treatment and work ancillary thereto, all combine to encourage education authorities to undertake the care of tuberculous children. There is need, he points out, for correlation between the tuberculosis dispensaries now being provided and the various institutions for children, but all institutions for tuberculous children should themselves be mutually correlated with one another, the school clinic, the open-air school, the sanatorium, so as to ensure easy transference of children from one institution to another whenever necessary. He suggests that children known to be or suspected of suffering from pulmonary tuberculosis should be referred to the dispensary as a clearing house and for purposes of record as well as for confirmatory diagnosis. He also states that, subject to certain conditions, a school clinic and tuberculosis dispensary may, if necessary, be housed in the same building. The procedure in dealing with the child would depend upon the degree of its illness and home circumstances. It may remain at the ordinary elementary school under special observation or be sent to an open-air school and attend for treatment at the dispensary or school clinic. The final decision as to whether a child is to receive residential treatment must be in the hands of the medical officer of the institution, but all recommendations for admission should be made by the school medical officer, who would keep a record of all children suspected or known to be suffering from tuberculosis. The decision as to the use of tuberculin would be left to the authority responsible for carrying out the treatment, whether at a dispensary or school clinic or at a residential institution.

Preventive Measures.—Summary.

In the concluding pages of the section in which he discusses the subject of tuberculosis in children Sir George Newman points out what the education authority may do in the way of prevention. He explains, in the first place, the need of giving the child a clear understanding of the value of a healthy way of living which may be done through hygienic lessons or by arranging for a visit to the schools by peripatetic lecturers. In the second place, he points out how much may be done by the timely and adequate treatment of diseases and ailments likely to predispose to tuberculosis, such as adenoids and enlarged tonsils, measles, whooping-cough, bronchitis, and decayed teeth, and by a more extended use of the Education (Provision of Meals) Act.

The main points which education authorities should bear in mind are, according to this report, the improvement of arrangements for the detection of the disease; the provision of additional accommodation for residential treatment, particularly for surgical cases; the extension

[1] THE LANCET, Feb. 17th, 1912, p. 424.

of open-air teaching by means of open-air schools, playground classes, and, if possible, the establishment of "night camps"; and the need for systematic and prolonged after-care and following up. An addendum on the care of tuberculous children in Germany is appended to this part of the report, in which an interesting account is given of the work in that country.

The Methods of "Following Up."

The important bearing which the adoption of the proceeding known as "following up" has upon the success of the work of medical inspection and treatment is generally recognised and need not be insisted upon here, but Sir George Newman usefully discusses the methods adopted and indicates the lines along which advance has been made during the year. In the first instance, he notes that this is being partly effected by the larger coöperation of parents, who are invited to be present at the time of the inspection of their children. It has not been found that medical inspection has undermined the sense of responsibility of the parents, but has indeed awakened it. It is true that the mother has only been present from 40 to 60 per cent. of the occasions on which her child was inspected, but Sir George Newman says that there is abundance of evidence in connexion with the results that the apparent slackness is often due to want of opportunity only. So again evidence shows that teachers are coöperating, while the services of the school nurse or health visitor are being increasingly employed. Indeed, efficient following up proves in many areas to be impossible unless the arrangements for the school medical service include the employment of school nurse or health visitor for whole or part time. It is important that their duties should be correlated with that of the attendance officer. Experience has shown, we are told, that the main cause of absence from school is ill-health, and hence the necessity for ascertaining the cause of the ill-health, and also for ensuring the child's return to school as soon as it should properly do so. In this matter the work of the medical officer and the attendance officer comes into close relation. In many districts assistance is given by voluntary agencies and care committees, of the value of which a number of the school medical officers speak favourably.

The Arrangements made for Medical Treatment.

Under the heading "Action Taken by Local Education Authorities in Respect of Medical Treatment," Sir George Newman gives some interesting particulars of their work. Thus we learn that 212 authorities employ school nurses, and 127 of these employ their nurses primarily to assist in the work of inspection. Spectacles have been provided at a cost of from 2*s.* to 3*s.* 6*d.* a pair, the parents often contributing to the cost, but experience has shown that the provision of spectacles is not of itself a sufficient remedy for defects of vision, but that other conditions relating to health, the condition of the home and of the school, its lighting, the size and character of the print of books, must all be taken into consideration. The use of X rays for the treatment of ringworm has increased during the year. Some of the authorities arranged to send the children thus affected to a specialist, others made contributions to hospitals or treatment centres not under their direct control, and others again themselves provided the necessary apparatus. The best results were obtained in Bradford, where of 253 cases treated during the year seven only required a second application. For the purpose of treatment of school children found defective by medical inspection, arrangements were made by some authorities with local hospitals, and these, when found satisfactory, were approved by the Board. It is clear that local education authorities undertaking schemes for medical treatment, whether predominantly "hospital" or predominantly "clinic," should consider: (1) the degree in which the scheme is adequate to the needs of the area; (2) the means taken to secure prompt and continuous attendance at the hospital or clinic without avoidable "leakage," and with satisfactory arrangements for following up; (3) the efficacy and economy of the treatment provided; (4) satisfactory arrangements for after-care, supplementary treatment, and subsequent provision; and (5) the degree in which the treatment scheme is coördinated with the school medical service of the area, particularly in its relation to inspection and re-inspection. The report gives an account in some detail of the arrangements made in London, and shows that, broadly speaking, they are now designed to meet in a substantial degree the above desiderata.

School Clinics.

The next subject to which we desire to refer in our present notice of Sir George Newman's report is that of school clinics. The institution of school clinics is the outcome of routine inspection of children in the schools. The clinic provides a place where a more complete examination can be made of children found or suspected to be suffering from defect of constitution or health, and it may provide a place where this defect is treated. Sir George Newman defines the inspection clinic as "a place for further examination as well as a clearing house," and he tells us that in 1911 there was a great extension of its work, and that "the value of the work of medical inspection in the schools has been much enhanced thereby." He believes that the fuller the development of the inspection clinic the wider is the knowledge of the school medical officers in regard to the medical problems presented by the children of school age, and he says that "the institution of inspection clinics has indirectly led to a large amount of treatment, both of a general and specific character." In support of this view he cites statements in the reports of several school medical officers which tell of their usefulness.

Referring especially to large cities, he says they should be organised in districts, and that no arrangements for the isolated treatment of defects can be considered as satisfactory substitutes for an organisation which, though simple in method, is comprehensive in dealing with the child's needs as a whole. He describes briefly the accommodation which should be provided. No elaborate structure or equipment is needed. Well-lighted rooms, scrupulously clean, are required, providing separate accommodation for children with contagious skin conditions and for differentiation of children who have recovered from infectious disease. He points out that in most areas there is perhaps the greatest need for the treatment of minor ailments, including under this description the common forms of skin disease, such as sores of all kinds, impetigo, scabies, pediculosis, ringworm, cuts, and bruises; external eye diseases, such as blepharitis and conjunctivitis, and discharge from the ears. This list of maladies, which we have quoted from Sir George Newman's report, would give ample material for a clinic related to any considerable population. That the list may be largely extended is obvious. Question arises by whom it should be officered. Sir George Newman considers that while the supervision and control of the medical work should be in the hands of the school medical officer, the actual work of treatment can be undertaken either by members of a whole-time medical staff of the authority or by part-time practitioners specially appointed for the purpose. The experience derived from general practice affords a better basis for the work of treatment in a school clinic than any other, and it is certain to our mind that development should take place along this line. The circumstances of some areas have to be specially considered, and some of the maladies which have to be treated may require particular provision, but for the greater proportion of the maladies which require medical aid there must be advantage in employing the services of medical practitioners in the district. Sir George Newman gives no dissent from the employment of the general medical practitioner; indeed, we think we may say that the Board of Education evidently recognises the advantages which attach to the adoption of this method of officering the school treatment clinic. Particulars are given in the report of the arrangements made in a few treatment centres. Thus we learn that in Abertillery the work is carried out by the school medical officer; in Bradford it is undertaken by the whole-time medical staff of the authority. In Wandsworth the treatment centre belongs to local medical practitioners, and two surgeons have been appointed to undertake the eye cases, while three surgeons have been attached to the aural department, and each surgeon operates once a fortnight. Dental treatment appears to be included among the branches of work in several school clinics at the present time.

The Work of the School Medical Officer.

Perhaps some of the most important of the pages in Sir George Newman's report are those in which he introduces a discussion of the physical condition of school children. He appeals very forcibly to school medical officers to

appreciate in its true relation the nature of the work upon which they are engaged, and insists upon the value of their work depending upon their ability to detect the beginnings of disease. It is necessary, he says, that under present circumstances their attention should be directed to the detection and amelioration of gross defects, but it is important that they should also consider disease in its earliest and less recognised aspects. This, no doubt, requires considerable skill and experience, but it is of the first importance, and Sir George Newman properly claims that no considerations of the alleged monotony of continuous medical inspection, or of the greater importance of other parts of the authority's scheme, or of the inadequacy of the staff, can be admitted as reasonable excuse for indifferent or slovenly work. He claims that what is needed is not only a higher degree of clinical study and investigation, but a more thorough appreciation of disease as a crippling agency, and he gives tuberculosis, malnutrition, rheumatism, heart disease, nervous maladies, &c., as examples of diseases producing this result. Solid progress in the value of medical inspection depends upon the school medical officer's professional work and upon his capacity as a practical administrator; the professional work calls for imagination as well as clinical ability, exact observation, and experience, the school doctor learning to understand much more fully than hitherto the sequelæ of even minor morbid conditions; the administrative work demands a wide knowledge of the circumstances of the case and of what is expedient, practicable, and reasonable in the way of remedy and prevention. For work in both directions better professional training, greater skill and knowledge are available than some years ago, and no one can doubt the devotion of the younger members of the medical profession upon whom the duties mainly devolve We have no hesitation in saying confidently that the care and clinical skill demanded by Sir George Newman will be forthcoming.

THE HEALTH OF THE NAVY IN 1911.

Continued Improvement in Health.

THE strength of the Royal Navy in the year 1911 amounted to 117,100, of which number 79,520 were serving in the Home Fleet or on the Home Station, the remaining 37,580 being distributed in the seven fleets and squadrons serving abroad. The health of the naval force as a whole shows a continuous improvement as compared with the average of the preceding five years, 1906–10. Thus, the number of cases of sickness has decreased from 679·9 per 1000 strength to 652·9; the daily sick from 28·07 to 27·07; the deaths from 3·35 to 3·12, and the invaliding from 16·44 to 15·94. It is true that these reductions are not very pronounced, neither is the improvement general throughout the entire force. But for the men serving in the Home Fleet and Home Station, forming about two-thirds of the whole, there is an improvement in every item, except in the daily sick ratio for the latter, and the invaliding ratio for the former, which have increased to a very slight extent. The highest admission ratio, 876 per 1000, occurred on the East Indies Station, but this was much below the five-year average (1040); the deaths on this station (10 per 1000) were, however, in excess of the average (8·76). The highest ratio of daily sick, amounting to 40·32 per 1000, was, as usual, among men of the Irregular List, including crews on passage to and from foreign stations and on the west coast of America. Next comes the Home Station, with a daily average of 35·85, while the healthiest command was that of North America and the West Indies, with a ratio of 19·84. The Home Fleet had, as usual, a much lower sick-rate, 23·36, than the men on the Home Station just mentioned, the latter body including depôts and training ships, the hospitals at home, and the Royal Naval College at Greenwich.

The chief causes of admission to hospital were venereal affections, amounting to 115 per 1000 of strength. This shows but slight improvement on the average ratio for 1906–10, which was 121. The daily sick from this cause numbered 7·21 per 1000, which is rather better than the quinquennial ratio of 8·01. The group of digestive diseases, with 114 per 1000 admissions, came next. Tuberculosis (2·44 cases per 1000) was slightly above the previous average of 2·02, and rheumatic fever with 7·61 was also higher than the average (5·83). On the other hand, pneumonia (3·88) and malaria (3·52) were less prevalent, and Mediterranean fever, with 6 admissions throughout the whole navy, was practically absent. The most fatal disease was tuberculosis, causing 38 deaths (0·32 per 1000); after which came enteric fever and pneumonia, each with 30 deaths (0·25 per 1000), and organic heart disease with 29 deaths. Enteric fever and tuberculosis were slightly more fatal than during the previous quinquennium. The chief causes of invaliding were heart disease (2·50), nervous diseases (2·40), and tuberculosis (2·02 per 1000). None of these ratios are reductions on the previous average.

On comparing the figures of the different naval commands we find, as already mentioned, that the East Indies Station suffered most from sickness, the force having an admission ratio of 876 per 1000, with 36·52 invalidings and 10 per 1000 deaths. Malaria caused 70·4 per 1000 admissions and pyrexia 28·7, the other chief causes of sickness being digestive diseases and affections of the skin and connective tissue. The healthiest commands were the North American and West Indies Station with 565·8, and the Home Fleet with 569·1 admissions per 1000.

Prevalence of Chief Diseases.

The most important diseases may now be considered in regard to their prevalence and distribution. *Influenza* caused less sickness (1364 cases) than has been usual of late years, the admission ratio being 11·64, compared with 24·46 in the previous quinquennium. There were 2 deaths. Cases occurred in all the commands (except the Cape), but it was mostly of a mild type. There were 172 cases of *diphtheria*, of which 155 were admitted on the Home Station; the type must have been very mild, as not a single case was fatal. Of these cases 116 occurred at the Shotley training establishment in the autumn; the disease prevailed somewhat in the neighbourhood of the depôt, and throughout Suffolk generally. There was also some prevalence at Devonport among the civil population during the latter part of the year, when 20 cases were admitted on the *Impregnable*.

Enteric fever caused 137 admissions and 30 deaths; the only outbreak in which a sequence of cases occurred was on board the *Argyll*, belonging to the Atlantic Fleet, but stationed in home waters; careful inquiry led to the conclusion that in all the seven cases infection was contracted when on leave ashore. Plymouth being held responsible for four cases. *Mediterranean fever* is now practically extinct in the navy; there were only six admissions during the whole year. One of these, in the Home Fleet, was of doubtful diagnosis; the remaining five were on the Mediterranean station, three being Englishmen and two Maltese. The two latter "had presumably both drunk unboiled goats' milk at their homes"; one of the other cases acknowledged to have done so at his home in Malta one month before admission. *Pneumonia* caused 3·88 admissions and 0·25 death per 1000, compared with the quinquennial averages of 4·41 and 0·34 respectively. A series of 14 cases, epidemic in character, occurred on the *Bellerophon* between Feb. 14th and March 5th, while serving in the Home Fleet, though it is not stated where she was stationed. The cases were characterised by early and marked cardiac depression, with a tendency to cerebral symptoms.

Malaria was much less prevalent in 1911 than has been the case recently; the admissions were in a ratio of 3·52 per 1000, compared with 5·03, the quinquennial average. On the East Indies Station the cases were 70·43 per 1000, compared with 142·4, the preceding quinquennial ratio; many of the cases were recurrent attacks of previous infection contracted in the Persian Gulf; there was little fever at Bombay. A series of 45 cases of malaria occurred among landing parties from the *Brilliant* and *Melpomene* during the revolution in Honduras in January, mostly of the malignant tertian variety. On the other hand, a party of 52 officers and men were landed for duty and exposed to infection in a very malarious country for three weeks. Quinine was given prophylactically, and mosquito nets used: the whole party escaped scot free. *Tuberculosis* caused 286 admissions and 38 deaths, giving ratios of 2·44 and 0·32 per 1000, slightly below the quinquennial ratio; the sick berth staff, with 6·82 per 1000 admissions, and ship's cooks, with a ratio of 5·52, suffered much more than the others; for

seaman ratings the admissions were 2·4 per 1000. *Venereal diseases*, as already mentioned, showed some, though slight, improvement on recent years; chancroid and gonorrhœa admissions, with ratios of 20 and 64 per 1000 respectively, are indeed slightly in excess of the quinquennial average; and secondary syphilis (25·2) is but very slightly less than the average (28·9), but the primary disease, with 5·61 cases per 1000, and 0·23 daily sick, has been much less frequent than hitherto. The quinquennial ratios were 10·79 and 0·78 respectively. The invaliding ratio (0·52) has also diminished compared with the previous average (0·94).

Only 83 cases of alcoholism were admitted from the whole force of 117,100. This works out at 0·7 case per 1000, a substantial reduction on the five-year average of 0·96. There were 218 cases of poisoning, of which 150 were due to ptomaines, a large increase over recent years, and 2 deaths resulted from this cause; 30 cases were caused by eating periwinkles obtained from beds in the Medway On board the *London*, of the Atlantic Fleet, there were 3 cases, 1 fatal, after eating fish cakes and tinned peas; 14 cases on the *Fantome*, of the Australian Station, were attributed to prawns; and 14 men on the *Pyramus*, of the same station, were attacked five hours after eating a meal of corned beef (not tinned).

The appendix contains a paper by Fleet-Surgeon P. W. Bassett-Smith on the Serum Diagnosis Test for Syphilis, and three other communications of professional interest.

ASYLUM REPORTS.

Report of the Inspector-General of the Insane of New South Wales for the Year 1911.—The largest number of patients yet recorded was admitted for treatment at the various hospitals of New South Wales. The number of admissions during the year was 1247, of whom 1061 were admitted for the first time. The increase is, in part, explained by the increase of the population in the State, but is somewhat greater than this alone would account for. The number of patients discharged recovered was 459, equal to a rate of 36·81 per cent. on the admissions and readmissions. In this return, however, are included the figures from the Hospital for Imbeciles at Newcastle. Excluding Newcastle, the recovery rate is 37·35 per cent. The number of deaths was 485, giving a percentage of 8·06 on the average number resident. The chief causes of death were general paralysis, general diseases of the brain, epilepsy and convulsions, and diseases of the lungs. It appears that for some time there has been a growing need for alteration in some parts of the Lunacy Act. The most pressing points requiring alteration appear to be provisions for defining the powers conferred by the Act in regard to the control of insane patients outside hospitals for the insane and licensed institutions and provision for the admission of voluntary patients to hospitals for the insane and licensed houses. A number of patients who are aware of their mental condition go to the hospitals seeking admission as ordinary patients. In many cases the illness is not sufficiently advanced to require certification, and in others the patient or his friends resent certification. At present there is no provision in the Act to permit of the admission of such patients, and in consequence they have to remain without treatment until their cases are further developed, with the result that curable conditions sometimes pass into those that are incurable. Provision is further required for placing on a proper footing the manner in which insane patients may be continued under care in private houses.

Mental Hospital of the City of Cardiff (Annual Report for the year 1911.)—The average daily number resident during the year was 697. There were admitted 232 patients, as against 208 patients during the previous year. The discharges numbered 166, and of these 105 were discharged recovered, the recovery rate being 60 per cent., a very remarkable one. Dr. Edwin Goodall, the medical superintendent, has looked through the recovery rates of 63 asylums since their opening. He finds a recovery rate of 60 per cent. only reached three times, and a rate from 50 per cent. to 60 per cent. 14 times. He regards such abnormally high rates in institutions compelled to receive all cases as due mainly to some unusually favourable circumstance, or combination of circumstances, not under control; and only to a lesser extent to treatment. Nearly 64 per cent. of the patients were in residence for not more than eight months. The deaths numbered 77, or 12·2 per cent. and 9·9 per cent. of males and females respectively. Post-mortem examinations were held in 72 of the deaths. A further extension of the physiological and pathological departments is contemplated, and Dr. Goodall appends to his report interesting abstracts of the research work during 1911 by himself and his colleagues.

Annual Report on Certification of Lunatics and Observation Wards, 1911–12 (by Mr. John Carswell, certifying physician in lunacy to the Glasgow parish council).—The parish of Glasgow has a population of 579,000. It is the statutory duty of the parish council to make provision for the medical examination of supposed lunatics, for the removal to asylums of persons certified to be insane, and for the maintenance of patients in asylums. When intimation is received by the inspector of poor that a person is in need of attention on account of mental disorder he immediately notifies the certifying physician in lunacy, who forthwith visits the patient. After medical examination the patient is removed by the inspector's assistants either to the observation wards or to the asylum, as the medical officer advises. Patients removed to the observation wards are not placed under any certificate implying insanity, and they are under no compulsion to go to the observation wards. During the year which ended on May 15th, 1912, there were dealt with 1138 cases. Of these, 333 were certified and removed directly from their homes to the asylum; 242 were treated for a time in the observation wards and subsequently certified; and 454 patients were treated in the observation wards and were subsequently discharged recovered or improved or died. The types of cases which are regarded as qualifying for admission to the observation wards are: (*a*) Where the mental symptoms are a sequel or accompaniment of diseases that in ordinary circumstances terminate within a definite time. (*b*) Where, although the mental symptoms would seem to indicate lunacy, the medical officer is of opinion that such symptoms are likely to be of short duration. (*c*) Where the patient's mental state gives rise to apprehension, but where the symptoms are not sufficiently marked to enable the certifying physician to affirm either sanity or insanity. (*d*) Where the mental disorder is associated with alcoholic abuse. (*e*) Senile cases where there are temporary symptoms of mental derangement, which make it undesirable that the patients should be treated in a general hospital ward. Indeed, the main object of the hospital is to provide a probationary curative hospital for incipient and recoverable forms of mental disorder. We wish there was a greater tendency to follow the excellent example set by the Glasgow Parish Council.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF THE COUNCIL.

A QUARTERLY meeting of the Council was held on Jan. 9th, Sir RICKMAN J. GODLEE, the President, being in the chair.

The best thanks of the Council were given to Mr. Harold Peake for his gift of a collection of skulls and skeletons of Anglo-Saxons of the seventh century, found near Newbury.

The best thanks of the Council were given to Mr. H. E. Juler, F.R.C.S., for presenting 150 specimens illustrating diseases and injuries of the eye. The best thanks of the Council were also given to Dr. T. Colcott Fox for presenting a series of cultures of fungi associated with diseases of the skin.

In response to a request from Sir Henry A. Miers it was resolved to place the lecture theatre at the disposal of Mr. F. W. Twort, superintendent of the Brown Institution, for a course of five lectures on Jöhne's disease.

The following resolutions received from a special committee of the Council were adopted:—

1. That the general hospitals with medical schools be advised each to establish a department for tuberculosis, such department to form part of the general service of the hospital.
2. That the hospitals with medical schools should consider the advisability of applying for provisional "approval" as regards sanatorium benefit.
3. That in localities where it is possible the services of consulting physicians and surgeons should be utilised for consultation in cases of tuberculosis under the Insurance Act.

VITAL STATISTICS

VITAL STATISTICS FOR 1912.

The following statement shows the birth- and death-rates and the rates of infantile mortality in England and Wales and in certain parts of the country during the year 1912, the figures being provisional:—

—	Annual rates per 1000 living.			Deaths under one year to 1000 births.
	Births.	Deaths.		
		Crude.	Corrected.*	
England and Wales	23·8	13·3	13·3	95
95 large towns, including London	24·9	13·8	14·6	101
146 smaller towns	23·8	12·4	13·0	99
England and Wales less the 241 towns	22·6	12·9	12·1	86
London...	24·7	13·3	14·3	90

* The corrected death-rates are the rates which would have been recorded had the age and sex constitution of the populations of the several areas been identical with that of England and Wales as enumerated in 1901. The corrections applied to the crude rates have been necessarily based upon the constitution of the populations of the areas as enumerated in 1901, and are, therefore, only approximately applicable to the conditions of 1912.

The figures relating to London have been added since 1910. It will be noted that the statistics now deal with 95 great and 146 smaller towns, instead of with 77 great towns and 136 smaller, as in previous years. The birth-rates and death-rates have alike decreased in every section save one—the birth-rate in the smaller towns shows a fractional increase.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, and whose aggregate population at the middle of this year is estimated at 17,852,764 persons, 8305 births and 5657 deaths were registered during the week ended Saturday, Jan. 18th. The annual rate of mortality in the 95 or 96 towns, which had been 15·1, 15·7, and 15·4 per 1000 in the three preceding weeks, rose to 16·5 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in these large towns averaged 15·9 per 1000, against 16·0 in London during the same period. The death-rates in the several towns ranged from 7·5 in Tottenham, 8·6 in Gillingham, 8·9 in Darlington, 9·0 in Wimbledon, and 9·1 in Great Yarmouth, to 23·8 in Carlisle and in Aberdare, 24·1 in Ipswich and in Wigan, 27·3 in Dudley, 27·5 in Rotherham, and 27·6 in West Hartlepool.

The 5657 deaths from all causes in the 96 towns were 372 in excess of the number in the previous week, and included 526 which were referred to the principal epidemic diseases, against 520 and 506 in the two preceding weeks. Of these 526 deaths, 277 resulted from measles, 87 from infantile diarrhœal diseases, 61 from whooping-cough, 59 from diphtheria, 25 from scarlet fever, and 17 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·5 per 1000, and coincided with the rate in each of the two preceding weeks. The deaths attributed to measles, which had declined from 336 to 268 in the three preceding weeks, slightly rose to 277 last week, and caused the highest annual death-rates of 3·8 in Sheffield, 4·0 in Swindon, in Barrow-in-Furness, and in Stockton-on-Tees, 4·2 in St. Helens, 4·4 in Preston, 4·6 in Wigan, 5·3 in Edmonton, and 6·1 in South Shields. The deaths of infants under 2 years of age referred to diarrhœa and enteritis, which had been 65, 78, and 72 in the three preceding weeks, rose to 87 last week, and included 31 in London, 6 in Liverpool, 5 in Stoke-on-Trent, 5 in Manchester, and 3 in West Ham. The fatal cases of whooping-cough, which had declined from 64 to 55 in the four preceding weeks, rose to 61 last week; 16 deaths were recorded in London, 5 in Liverpool, 4 in Blackburn, and 3 in Rotherham. The deaths attributed to diphtheria, which had been 52, 42, and 64 in the three preceding weeks, fell to 59 last week, and included 9 in London, 6 in Portsmouth, 4 in Liverpool, 4 in Manchester, and 3 in Leeds. The deaths referred to scarlet fever, which had increased from 21 to 32 in the three preceding weeks, declined to 25 last week, of which number 9 were registered in London and 7 in Birmingham. The fatal cases of enteric fever, which had risen from 9 to 15 in the four preceding weeks, further rose to 17 last week, and included 3 in London, and 2 each in Birmingham, in Manchester, and in Salford.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and in the London Fever Hospitals, which had been 2112, 1954, and 1889 at the end of the three preceding weeks, had further declined to 1828 on Saturday last; 204 new cases of this disease were admitted to these institutions during the week, against 191, 170, and 202 in the three preceding weeks. These hospitals also contained on Saturday last 972 cases of diphtheria, 810 of measles, 257 of whooping-cough, and 40 of enteric fever, but not one of small-pox. The 1433 deaths from all causes in London were 103 in excess of the number in the previous week, and were equal to an annual death-rate of 16·5 per 1000. The deaths resulting from diseases of the respiratory system, which had steadily risen from 285 to 311 in the four preceding weeks, further rose to 353 last week, and were 50 above the number recorded in the corresponding week of last year.

Of the 5657 deaths from all causes in the 96 towns last week, 165 resulted from various forms of violence and 446 were the subject of coroners' inquests. The causes of 63, or 1·1 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified last week in Manchester, Leeds, Bristol, Bradford, Newcastle-on-Tyne, Nottingham, Portsmouth, Salford, and in 60 other smaller towns. The 63 uncertified causes of death included 11 in Liverpool, 6 in Birmingham, 4 in St. Helens, 4 in Gateshead, and 3 each in London, in Bootle, in Southport, in Preston, and in Carlisle.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,259,400 persons at the middle of this year, 1211 births and 802 deaths were registered during the week ended Saturday, Jan. 18th. The annual rate of mortality in these towns, which had been 17·1, 17·6, and 17·3 per 1000 in the three preceding weeks, rose to 18·5 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in the Scotch towns averaged 17·8, or 1·9 per 1000 above the rate which was recorded in the 96 large English towns during the same period. Among the several Scotch towns the death-rates last week ranged from 13·5 in Hamilton and in Kilmarnock, 15·3 in Motherwell, and 16·1 in Falkirk, to 20·7 in Paisley, 25·5 in Greenock, and 27·5 in Ayr.

The 802 deaths from all causes were 54 in excess of the number in the previous week, and included 64 which were referred to the principal epidemic diseases, against 66 and 57 in the two preceding weeks. Of these 64 deaths, 36 resulted from whooping-cough, 10 from diphtheria, 10 from infantile diarrhœal diseases, 5 from scarlet fever, 2 from enteric fever, and 1 from measles, but not one from small-pox. These 64 deaths from the principal epidemic diseases were equal to an annual death-rate of 1·5 per 1000, and coincided with the rate in the 96 large English towns. The deaths attributed to whooping-cough, which had been 18, 29, and 30 in the three preceding weeks, further rose to 36 last week, and included 26 in Glasgow and 3 in Leith. The deaths referred to diphtheria, which had been 5, 13, and 10 in the three preceding weeks, were again 10 last week, of which number 7 occurred in Glasgow. The fatal cases of diarrhœa and enteritis (among infants under two years of age), which had been 8, 11, and 7 in the three preceding weeks, rose to 10 last week, and comprised 5 in Dundee, 4 in Glasgow, and 1 in Kilmarnock. The 5 deaths attributed to scarlet fever, of which 4 were recorded in Glasgow and 1 in Dundee, were equal to the average in the four preceding weeks. The 2 fatal cases of enteric fever were registered in Aberdeen and Clydebank respectively, and that of measles in Falkirk.

The deaths referred to diseases of the respiratory system

in the 16 Scotch towns, which had steadily declined from 207 to 148 in the five preceding weeks, rose to 162 in the week under notice; 24 deaths were attributed to different forms of violence, against 23 and 27 in the two previous weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,199,180 persons at the middle of this year, 631 births and 510 deaths were registered during the week ended Saturday, Jan. 18th. The annual rate of mortality in these towns, which had been 22·0 and 21·0 per 1000 in the two preceding weeks, rose to 22·2 per 1000 in the week under notice. During the first three weeks of the current quarter the mean annual death-rate in these Irish towns averaged 21·7 per 1000. In the 96 large English towns the corresponding rate did not exceed 15·9, while in the 16 Scotch towns it was equal to 17·8 per 1000. The annual death-rate recorded in the several towns last week was equal to 22·3 in Dublin (against 16·5 in London and 18·5 in Glasgow), 20·3 in Belfast, 25·2 in Cork, 16·5 in Londonderry, 13·5 in Limerick, and 32·3 in Waterford, while in the remaining 21 smaller towns the mean rate was 25·8 per 1000.

The 510 deaths from all causes in the 27 Irish towns were 26 in excess of the number in the previous week, and included 49 which were referred to the principal epidemic diseases, against 50 and 53 in the two preceding weeks. Of these 49 deaths, 22 resulted from measles, 14 from diarrhœal diseases, 6 from diphtheria, 3 from whooping-cough, 2 from enteric fever, and 2 from scarlet fever, but not one from small-pox. These 49 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·1 per 1000, against 1·5 per 1000 in the 96 large English towns and in the 16 Scotch towns. The deaths attributed to measles, which had been 25, 20, and 22 in the three preceding weeks, were agatn 22 last week, and comprised 17 in Belfast, 4 in Tralee, and 1 in Newry. The deaths referred to diarrhœa and enteritis, which had been 6, 12, and 17 in the three preceding weeks, were 14 last week, and included 12 of infants under 2 years of age; 9 deaths were registered in Belfast and 3 in Dublin. The fatal cases of diphtheria, which had been 4, 8, and 5 in the three preceding weeks, were 6 last week, and comprised 3 in Dublin and 3 in Belfast. Of the 3 deaths attributed to whooping-cough, 2 were recorded in Dublin and 1 in Belfast; the 2 fatal cases of scarlet fever were registered in Dublin and Lurgan, and those of enteric fever in Dublin and Belfast, respectively.

The deaths referred to diseases of the respiratory system, which had been 85, 96, and 103 in the three preceding weeks, further rose to 113 in the week under notice. Of the 510 deaths from all causes, 171, or 34 per cent., occurred in public institutions, and 4 resulted from different forms of violence. The causes of 19, or 3·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week did not exceed 1·1 per cent.

VITAL STATISTICS OF LONDON DURING DECEMBER, 1912.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 5·5 per 1000 of the population, estimated at 4,519,754 persons in the middle of last year; in the three preceding months the rates were 6·3, 6·8, and 6·4 per 1000 respectively. The lowest rates last month were recorded in Kensington, Chelsea, the City of Westminster, Finsbury, and the City of London; and the highest rates in Bethnal Green, Deptford, Greenwich, Lewisham, and Woolwich. Scarlet fever was much less prevalent than it had been in the previous month; among the several metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Stoke Newington, Stepney, Bermondsey, Wandsworth, Deptford, Greenwich, and Woolwich. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 1845, 2242, and 2250 at the end of the three preceding months, had declined again to 2088 at the end of last month; the weekly admissions averaged 226, against 277, 303, and 282 in the three preceding months. The prevalence of diphtheria showed a slight decline from that recorded in the preceding month; this disease was proportionally most prevalent in Paddington, Bethnal Green, Deptford, Greenwich, Lewisham, and Woolwich. There were 959 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 941, 897, and 917 at the end of the three preceding months; the weekly admissions averaged 120, against 141, 110, and 124 in the three preceding months. Enteric fever was slightly more prevalent than it had been in the preceding month; the greatest proportional prevalence of this disease was recorded in Chelsea, St. Marylebone, St. Pancras, Southwark, Bermondsey, and Lambeth. The Metropolitan Asylums Hospitals contained 37 enteric fever patients at the end of last month, against 49, 54, and 42 at the end of the three preceding months; the weekly admissions averaged 7, against 10, 7, and 5 in the three preceding months. Erysipelas was proportionally most prevalent in Shoreditch, Bethnal Green, Stepney, Poplar, Southwark, and Deptford. The 31 cases of puerperal fever notified during the month included 4 in Hackney, 3 in Hammersmith, 3 in St. Pancras, 3 in Finsbury, and 2 each in Fulham, Stepney, Poplar, Lambeth, and Wandsworth. The 7 cases of cerebro-spinal meningitis included 2 in Lambeth, and one each in Islington, Hackney, Bermondsey, Battersea, and Deptford; the 3 cases of polio-myelitis belonged respectively to Fulham, Stepney, and Wandsworth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex- and age-constitution of the populations of the several boroughs. During the four weeks ending Dec. 28th the deaths of 5399 London residents were registered, equal to an annual rate of 16·4 per 1000; in the three preceding months the rates were 12·5, 15·5, and 15·5 respectively. The death-rates last month ranged from 11·3 in Wandsworth, 12·3 in the City of London, 13·0 in Hampstead, 13·2 in Hackney, and 13·5 in Stoke Newington, to 18·7 in Southwark, 18·8 in Poplar, 20·1 in Bethnal Green, 21·5 in Stepney, 23·5 in Finsbury, and 25·2 in Shoreditch. The 5399 deaths from all causes included 474 which were referred to the principal infectious diseases; of these, 292 resulted from measles, 9 from scarlet fever, 28 from diphtheria, 53 from whooping-cough, 10 from enteric fever, and 82 from diarrhœa and enteritis among children under two years of age. No death from any of these diseases was recorded last month in the City of London or in Hampstead; among the other metropolitan boroughs they caused the lowest death-rates in the City of Westminster, Hackney, Bermondsey, Lambeth, Camberwell, Lewisham, and Woolwich; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Stepney, Battersea, and Greenwich. The 292 deaths from measles were 151 in excess of the corrected average number for the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Islington, Finsbury, Shoreditch, Bethnal Green, Stepney, Poplar, and Battersea. The 9 fatal cases of scarlet fever showed a decline of 21 from the corrected average number, and included 4 in Wandsworth, 2 in St. Marylebone, and 1 each in St. Pancras, Islington, and Southwark. The 28 deaths from diphtheria were equal to one-half the corrected average number; of these 28 deaths 4 belonged to Islington, 4 to Southwark, 3 to Camberwell, 3 to Greenwich, 3 to Lewisham, and 2 to Lambeth. The 53 deaths from whooping-cough were slightly below the corrected average number; the highest death-rates from this disease last month were recorded in Kensington, Hammersmith, Chelsea, Bethnal Green, Battersea, Deptford, and Greenwich. The 10 fatal cases of enteric fever were 5 below the corrected average number, and included 2 in Poplar and 2 in Wandsworth. The mortality from diarrhœa and enteritis among children under two years of age was proportionally greatest in Hammersmith, Finsbury, Shoreditch, Bethnal Green, and Stepney. In

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING DECEMBER, 1912.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1912.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.†
LONDON...	4,519,754	—	961	572	—	47	—	31	274	7	3	1895	5·5	—	292	9	28	53	10	82	474	1·4	5399	16·4
West Districts.																								
Paddington	142,362	—	23	26	—	2	—	1	9	—	—	61	5·6	—	10	—	—	1	—	—	11	1·0	167	16·3
Kensington	171,746	—	14	9	—	1	—	—	5	—	—	29	2·2	—	6	—	—	6	1	3	16	1·2	203	16·6
Hammersmith	122,750	—	27	5	—	1	—	3	3	—	—	39	4·1	—	5	—	—	4	1	4	14	1·5	162	17·9
Fulham	155,402	—	39	14	—	2	—	2	11	—	1	69	5·8	—	9	—	1	—	—	1	11	0·9	172	15·1
Chelsea	65,397	—	7	2	—	2	—	—	1	—	—	12	2·4	—	6	—	—	2	—	1	9	1·8	88	18·1
City of Westminster	157,248	—	18	8	—	—	—	1	10	—	—	37	3·1	—	2	—	1	—	—	2	5	0·4	165	15·4
North Districts.																								
St. Marylebone	116,155	—	13	8	—	2	—	—	10	—	—	33	3·7	—	5	2	—	—	1	2	10	1·1	143	17·0
Hampstead	85,966	—	12	10	—	—	—	—	4	—	—	26	3·9	—	—	—	—	—	—	—	—	—	76	13·0
St. Pancras	216,145	—	38	22	—	5	—	3	7	—	—	75	4·5	—	7	1	1	2	—	3	14	0·8	240	15·2
Islington	326,398	—	61	39	—	5	—	—	7	1	—	113	4·6	—	30	1	4	—	1	4	40	1·6	414	17·1
Stoke Newington	50,581	—	15	2	—	—	—	1	3	—	—	21	5·4	—	2	—	—	1	—	—	3	0·8	50	13·5
Hackney	222,986	—	35	21	—	1	—	4	11	1	—	73	4·3	—	4	—	—	1	—	5	10	0·6	218	13·2
Central Districts.																								
Holborn	48,026	—	5	7	—	—	—	—	5	—	—	17	4·6	—	1	—	—	—	—	2	3	0·8	52	15·2
Finsbury	86,130	—	9	4	—	—	—	3	6	—	—	22	3·3	—	28	—	—	1	—	8	37	5·6	150	23·5
City of London	18,695	—	2	2	—	—	—	—	—	—	—	4	2·8	—	—	—	—	—	—	—	—	—	16	12·3
East Districts.																								
Shoreditch	110,430	—	13	5	—	—	—	—	11	—	—	29	3·4	—	45	—	—	1	—	6	52	6·1	203	25·2
Bethnal Green	127,985	—	31	25	—	—	—	1	18	—	—	75	7·6	—	27	—	1	4	—	4	36	3·7	195	20·1
Stepney	277,315	—	83	11	—	3	—	2	26	—	1	126	5·9	—	39	—	1	2	1	12	55	2·6	438	21·5
Poplar	161,597	—	24	17	—	2	—	2	17	—	—	62	5·0	—	13	—	1	1	2	3	20	1·6	226	18·8
South Districts.																								
Southwark	190,017	—	44	23	—	3	—	—	18	—	—	88	6·0	—	1	1	4	—	—	5	11	0·8	261	18·7
Bermondsey	125,260	—	37	10	—	2	—	—	8	1	—	58	6·0	—	1	—	—	—	—	2	3	0·3	148	15·8
Lambeth	297,550	—	61	31	—	5	—	2	12	2	—	113	5·0	—	6	—	2	—	1	4	13	0·6	338	15·3
Battersea	167,589	—	46	24	—	2	—	—	7	1	—	80	6·2	—	20	—	—	5	—	2	27	2·1	201	16·7
Wandsworth	321,881	—	96	25	—	4	—	2	20	—	1	148	6·0	—	19	4	1	1	2	1	28	1·1	264	11·3
Camberwell	261,691	—	65	23	—	1	—	1	19	—	—	109	6·4	—	2	—	3	3	—	3	11	0·5	277	14·3
Deptford	109,377	—	34	17	—	1	—	—	10	1	—	63	7·5	—	1	—	1	7	—	2	11	1·3	123	15·5
Greenwich	95,994	—	32	39	—	—	—	1	5	—	—	77	10·5	—	1	—	3	11	—	—	15	2·0	118	16·3
Lewisham...	165,249	—	38	46	—	2	—	1	4	—	—	91	7·2	—	1	—	3	—	—	2	6	0·5	169	13·9
Woolwich	121,932	—	39	97	—	1	—	1	7	—	—	145	16·5	—	1	—	1	—	—	1	3	0·3	122	13·9
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

*Including membranous croup. † The death-rates are corrected for variations in sex- and age-constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

conclusion, it may be stated that the aggregate mortality in London during December from the principal infectious diseases, excluding diarrhœa, was 31·5 per cent. above the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet Surgeon: J. McElwee to the *Carnarvon*, on transfer of flag. Staff Surgeons: T. H. Vickers to the *Blanche*, on recommissioning; N. B. V. Jacob to the *Vivid*, additional, on transfer of flag; F. Bolster to the *King Alfred*, on transfer of flag, and to the *Hecla;* and A. J. Sheldon to the *Philomel*. Surgeon: W. L. Cowardin to the *Carnarvon*, on transfer of flag.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Edwin Eckersley, from supernumerary, is restored to the establishment, vice G. Wilson, retired (dated Jan. 20th, 1913).

Surgeon-General L. E. Anderson has arrived home for duty from India on transfer to the Home Establishment.

Colonel R. Kirkpatrick, C.M.G., Assistant Director of Medical Services at Bloemfontein, South African Command, has been placed under orders for transfer to India. Colonel A. E. Tate has taken up duty at Allahabad as Assistant Director of Medical Services to the Allahabad and Fyzabad Brigades of the Eighth (Lucknow) Division.

Lieutenant-Colonel J. S. Green, on return home from a tour of service in India, has been appointed to the Irish Command for duty. Lieutenant-Colonel H. J. Fletcher has been transferred from Abbottabad to Sialkot and appointed to hold charge of the Military Hospital. Lieutenant-Colonel Sir W. B. Leishman has been selected for appointment as Honorary Physician to His Majesty the King in succession to Surgeon-General G. D. Bourke, C.B., retired. Lieutenant-Colonel B. Forde, in charge of the Detention Hospital at Deepcut, Aldershot Command, has been placed under orders for transfer to Salisbury Plain District to hold charge of the Military Hospital at Bulford Camp in succession to Lieutenant-Colonel C. W. Johnson. Lieutenant-Colonel H. E. Cree has taken over charge of the Cantonment Hospital at Subathu, Simla Hill District, Third (Lahore) Division.

Major G. J. S. Archer has been appointed for duty to the Southern Command on transfer to the Home Establishment by exchange from Burma. Major H. M. Nicholls, in charge of the Military Hospital at Deolali, has been granted six months' leave of absence home from India. Major T. B. Unwin has been transferred from the London District to Caterham and appointed to hold charge of the Military Hospital. Major E. W. Powell has taken up duty at Ballincollig on transfer from Kilworth. Major F. W. Begbie has been selected by H.E. the Commander-in-Chief in India for appointment as Specialist in Advanced Operative Surgery to the Fifth (Mhow) Division. Major R. B. Black has arrived home on leave of absence from Egypt. Major D. J. Collins, Specialist Sanitary Officer to the Dublin District, has embarked for a tour of service in India. Major C. W. H. Whitestone, Deputy Assistant Director of Medical Services for Mobilisation in the First (Peshawar) Division, has been transferred from Cherat to Peshawar. Major A. D. Waring, on return home for duty from Hong-Kong, has been appointed to the Southern Command for duty. Major W. J. Taylor has been transferred from the Military Hospital at Colchester to Bedford, and appointed to officiate in charge of the Military Hospital and Recruiting Medical Officer at the Depôt of the Bedfordshire Regiment during the absence on leave of Lieutenant-Colonel G. F. Poynder. Major A. C. Fox has been transferred from the Military Hospital at the Curragh Camp, Kildare, to Dublin. Major E. Brodribb has taken up duty at the Military Hospital, Dover, on transfer from Shorncliffe.

Captain R. J. Franklin, in medical charge at Fort Camden, Queenstown, Cork District, has been placed under orders for service in India. Captain F. W. Lambelle, specialist in advanced operative surgery to the Fifth (Mhow) Division, has been appointed for duty to the Station Hospital at Maymyo, Upper Burma, on permanent transfer. Captain C. R. M. Morris, on return from a tour of duty at Sialkot, has been appointed to the Southern Command. Captain G. F. Rudkin, staff surgeon at Fort St. George, Madras, and medical officer to H.E. the Governor's Body Guard, has been granted eight months' general leave of absence home from India. Captain J. W. S. Seccombe has been transferred from the Military Hospital at Devonport to Taunton for duty. Captain A. L. Foster has joined the Military Hospital at Rawal Pindi on transfer from Kalabagh Cantonment, Murree Hill District. Captain M. P. Leahy, medical officer to the Ordnance Establishment and Section Hospital at Kirkee, has arrived home on six months' leave of absence from India. Captain C. Pyley has embarked for a tour of duty at Bermuda. Captain G. De la Cour has been placed under orders to join the Irish Command, and on arrival will be appointed to the Dublin District for duty. Captain J. E. H. Gatt has been transferred from the Military Hospital at Benares to Cawnpore Cantonment for duty. Captain F. W. M. Cunningham has joined the Station Hospital at Kuldana, Murree Hill District, on transfer from Rawal Pindi Cantonment. The following officers have joined the Royal Army Medical College, Grosvenor-road, S.W., for the promotion courses from the rank of Captain to that of Major:—Captains W. C. Nimmo (from Chatham), M. Keane (Colchester), C. F. White (Portland), F. C. Sampson (Barry Camp), T. S. Blackwell (Athlone), P. J. Marett (Gravesend), A. D. O'Carroll (Bulford Camp), W. C. Smales (Poona), T. C. C. Leslie (Youghal), and H. M. J. Perry (Woolwich).

Lieutenant J. M. Weddell, on arrival in India from the London District, has been appointed to the Eighth (Lucknow) Division. Lieutenant C. H. Stringer has been transferred from Rollestone Camp, Salisbury Plain, to the Royal Victoria Hospital, Netley. Lieutenant L. C. Hayes has left the London District for duty in Bermuda. Lieutenant V. P. Hutchinson, on arrival in the South African Command, has been attached to the Military Hospital at Pretoria. Lieutenant P. A. With has been transferred from the Military Hospital at the Curragh Camp to Kilbride. Lieutenant E. G. S. Cane, at present stationed at Dublin, has been placed under orders to embark for service in India.

INDIAN MEDICAL SERVICE.

Colonel H. St. Clair Carruthers, Inspector-General of Civil Hospitals in Burma, has arrived home on eight months' combined leave of absence from Burma. Colonel B. B. Grayfoot has taken up duty as Assistant Director of Medical Services to the Derajat and Bannu Brigades of the Eighth (Lucknow) Division.

Lieutenant-Colonel S. H. Henderson, Officiating Inspector-General of Prisons in the United Provinces, has arrived home on 13 months' leave of absence from India. Lieutenant-Colonel D. T. Lane has taken up duty as Civil Surgeon at Ambala on return from leave of absence. Lieutenant-Colonel A. R. S. Anderson has been selected to officiate as Civil Surgeon at Dacca, in succession to Lieutenant-Colonel E. A. Hall, granted furlough.

Major T. H. Foulkes has been selected by the Foreign Department for appointment as Physician to the Mysore Durbar. Major P. St. C. More has taken up duty as Civil Surgeon at Sialkot on return from leave of absence. Major E. J. O'Meara has been selected for appointment as a Fellow of the Allahabad University. Major J. G. G. Swan, civil surgeon at Dalhousie, has been placed under orders for transfer to Jullundur for appointment as Civil Surgeon. Major J. W. Lethbridge has been granted 15 months' leave of absence home from India by the Foreign Department. Major C. F. Weinman, civil surgeon at Dinajpur, has been granted furlough. His Majesty the King has been graciously pleased to appoint Major James Davidson to be a Companion of the Distinguished Service Order (D.S.O.) in recognition of his services in connexion with the military operations against the Abors on the North-Eastern Frontier of India. Major W. H. Tucker has taken up duty as Physician to the Travancore Durbar under the Foreign Department. Major G. Bidie has been granted six months' extension of his leave of absence home from India on medical certificate.

The Chief Commissioner of the Central Provinces has been pleased to appoint Captain E. P. Wernicke, officiating civil surgeon at Hoshangabad, to the executive and medical charge of the Hoshangabad District Jail. Captain F. P.

Mackie has been placed upon special duty under the orders of the Director-General of the Indian Medical Service. Captain K. S. Singh, on return to duty from leave of absence, has been appointed Plague Medical Officer at Amritsar. Captain J. J. Robb has been granted combined and study leave of absence for one year and 14 days home from India. Captain A. W. Hewlett, officiating superintendent at the Central Prison, Agra, has been placed on special duty, under the orders of the Government of India. Captain F. H. Salisbury has taken up charge as Superintendent of the Central Jail at Dacca, in succession to Major E. R. Parry. Captain C. A. F. Hingston has arrived home on leave of absence from India. Captain W. T. McCowen has been promoted to the brevet rank of Major, in recognition of his gallant services during an attack on a squadron of his regiment in Persia. Captain J. McPherson has been selected by the Foreign Department for appointment as Medical Officer in charge of the Mewar Bhil Corps. Captain P. M. Rennie has been granted an extension of leave of absence for five months for study purposes. Captain H. B. Scott has been appointed to officiate as Resident Medical Officer in the General Hospital, Rangoon, in succession to Captain S. T. Crump, granted leave of absence. Captain E. C. Taylor, officiating agency surgeon of the second class, has been deputed to the Central Research Institute at Kasauli for special duty in the Bacteriological Department. Captain L. Reynolds and Captain E. S. Phipson have arrived home on leave of absence from India. The services of Captain A. J. H. Russell have been placed temporarily at the disposal of the Government of Madras Presidency. Captain H. Watts, officiating civil surgeon at Betul, has been appointed to the Executive and Medical Charge of the Betul District Jail. The services of Captain A. S. Leslie, superintendent of the Central Jail at Rangoon, Lower Burma, have been replaced at the disposal of the Home Department of the Government of India.

H.E. the Commander-in-Chief in India has appointed Lieutenant G. Tate to be Specialist in Midwifery and Diseases of Women and Children to the Fifth (Mhow) Division of the Southern Army.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st Home Counties Field Ambulance, Royal Army Medical Corps: Duncan Matheson Johnston to be Lieutenant (dated Jan. 18th, 1913).

3rd Scottish General Hospital, Royal Army Medical Corps: Major Thomas K. Dalziel to be Lieutenant-Colonel (dated Dec. 16th, 1912). Captain William MacLennan to be Major (dated Dec. 16th, 1912).

2nd Western General Hospital, Royal Army Medical Corps: The undermentioned officers resign their commissions (dated Jan. 22nd, 1913):—Major Edmund T. Milner, Major Judson S. Bury, and Captain James L. Smith. The undermentioned Captains to be Majors (dated Jan. 22nd, 1913):—Arthur H. Burgess, John H. Ray, and George R. Murray.

Attached to Units other than Medical Units.—Lieutenant John Tait to be Captain (dated Dec. 30th, 1912). Lieutenant Thomas N. Thomas to be Captain (dated Dec. 17th, 1912). Lieutenant William H. Newton resigns his commision (dated Jan. 18th, 1913.) Lieutenant Joseph B. Dawson resigns his commission (dated Jan. 22nd, 1913).

For attachment to Units other than Medical Units.—Frank Clayton to be Lieutenant (dated Nov. 18th, 1912.)

ARCHIV FÜR SCHIFFS- UND TROPEN-HYGIENE.

In the *Archiv für Schiffs- und Tropen-Hygiene* Dr. L. Külz has described a myositis purulenta tropica or abscess amongst the muscles, which he ascribes to filaria loa. He has frequently met it in Cameroon, and has himself suffered from it, we are sorry to note. The disease begins with slight pain ascribed to an accident or to a chill, and thought to be rheumatic, but soon becomes serious. Still the patient does his work with little feeling of illness and is surprised to find that his temperature is raised. There are deep tenderness on pressure, a hard swelling with indefinite edges, increased faradic excitability of the affected muscles, and leucocytosis. The swelling may resolve, but usually suppurates. The abscess should be opened without waiting for it to point; if it remain unopened the pus will burrow and the patient will waste. The first abscess is in the limbs, but never on face, neck, hands, or feet; the secondary abscesses occur anywhere in the muscles. Lymphatic infection is rare. The disease is more common and the abscesses more numerous in natives than in Europeans. Children are not attacked. The treatment is free incision (the pus often bursts out with surprising force and quantity), and then drainage. The wounds heal quickly. Dr. Külz marks the most tender spot and makes his incision over that. Yet it is sometimes difficult to find the focus, hence exploratory puncture is little help. A filaria was once found in an exploratory puncture. The disease occurs in the area of distribution of filaria loa; all the patients had microfilaria diurna in their blood, and some had a history of filaria loa. That is why children who are not attacked by this filaria do not suffer from these abscesses, and the greater severity of the disease in natives than in Europeans is also thus explained. Dr. Külz then states the damage done by filaria loa: (1) filarial œdemas; (2) its presence on the eye; (3) it infects the blood with microfilaria diurna; (4) dying it becomes a foreign body in the muscles and causes tropical muscle abscesses. In the same number Staff-Surgeon Dr. Jaeger gives a very complete account of the demography of the Ebolowa district in South Cameroon. He has evidently won the confidence of the natives, who, in a pleasant fruitful land, numbered some 6000. Of 635 men examined 20 per cent. had gonorrhœa and 3·5 per cent. had chancres. The women used to have on an average 4¼ children, but that number is decreasing, partly by abortion, partly perhaps in consequence of prostitution. The infantile mortality is 165. Prominent diseases are malaria, yaws, and intestinal parasites. He suggests that the frequency of yaws may explain the relatively small severity of syphilis. Small-pox has been banished by vaccination, of the usefulness of which the natives are so well aware that they seek it.

ROYAL INSTITUTION OF GREAT BRITAIN.—On Thursday next (Jan. 30th) Professor B. Hopkinson delivers the first of two lectures at the Royal Institution on "Recent Research on the Gas Engine," and on Saturday, Feb. 8th, Professor Sir J. J. Thomson begins a course of six lectures on "The Properties and Constitution of the Atom." The Friday evening discourse on Jan. 31st will be delivered by Mr. George M. Trevelyan on "The Poetry and Philosophy of George Meredith," and on Feb. 7th by Sir John Murray on "Life in the Great Oceans."

WEST AFRICAN MEDICAL STAFF DINNER.—The annual dinner of the West African Medical Staff was held at the Walnut Rooms, Grand Hotel, London, on Jan. 15th, under the genial chairmanship of Mr. J. P. Fagan, formerly principal medical officer, Northern Nigeria. After the health of the King had been honoured, Sir James Kingston Fowler proposed the toast of "The West African Medical Staff." As a member of the Departmental Committee which inquired into the disadvantages under which the staff laboured, he knew of the admirable work which was being done by members of the staff. Already they had produced a marked diminution in the death-rate and invaliding rate of the non-native population of the West Coast. The speaker concluded with a reference to the lasting influence for good of Mr. Joseph Chamberlain's work at the Colonial Office. Mr. G. F. Darker, who replied on behalf of the staff, pointed out that the position of the medical officers in relation to their patients—black and white—and to the various authorities was one of perpetual delicacy. The chairman then proposed the toast of "The Visitors," and coupled with it the name of Sir John Anderson, Permanent Under-Secretary of State for the Colonies, to whom he referred in terms of high appreciation. Sir John Anderson, in reply, spoke of the kindly feeling which he had always had for the West African Service, and gave interesting reminiscences of the old *régime* on the West Coast. He said that, in spite of small numbers and many difficulties, the medical staff had always shown the same loyalty and efficiency throughout the changing conditions. After Dr. W. T. Prout had proposed "Absent Friends" the company reassembled informally in an adjoining room, where the health of "The Chairman" was proposed in an amusing speech by Dr. R. H. Kennan and very warmly received.

Correspondence.

"Audi alteram partem."

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND AND DEGREES.

To the Editor of THE LANCET.

SIR,—At the annual meeting of the Royal College of Surgeons of England in 1911 my resolution to press the Council to obtain a degree for the Fellows and Members, after the satisfactory discussion, had no need to be, and was not, voted on, because it was said the Council had it in hand, as it was then thought. It was therefore a disappointment that the President made no allusion to what they intended to do with it at the yearly meeting of 1912. Neither does the last report of the College enter upon the progress towards the changes expected to accrue to obtain degrees for the Colleges. Of course, the case was not one *sub judice*, because they do try to refer to this question in regard to the dental diplomas. There they stray to the resuscitated cry for a "one-portal" entrance—as an alternative suppression to a full reform—and there it runs: "It is undesirable that a university distinction should carry the right to practise." Why not? Surely we have got beyond the mediævalism (the German mediævalism, too) of the *licentia docendi* before the old degree of disputation and *Magistrum*. And their chief argument of propriety, too, falls to the ground when the older colleges of learning or medicine in Italy, France, and Germany have habitually merged into the ancient or modern universities, and when in our own universities every degree in the United Kingdom, as everywhere else, does carry the right to practise, and apparently always will do so!

So far, and until the last false move for a "one-portal" has been changed again, it must be said that the generalship over the Council's poor ground of action before the Royal Commission on University Education in London has only led to a temporary retreat, a good reason probably being that the leading has been carried on under divided counsels and vacillatingly, first from the older (now inadequate) schemes for a separate College or non-university degree, and then to this particular "one-portal" or non-degree scheme. That exhausted style of a single collegiate portal to be imposed before the degree portal could be approached would just uphold, without purpose, the natural behests of those entirely uninterested in the reform movement. No specialised representation has ever been allowed to the body of the Fellows and Members to make their side of the question effective. And so as to obtain that standing the Fellows and Members of the Conjoint Colleges would be well advised to form a Reform or Medical Colleges' Society with their special interests and this reform as the basis, and at the formation of which I would gladly assist. The hollowness of the "one-portal" sham wants correcting, or there will be the danger of obtaining no redress whatever for the College men, and only continuing the dead level which persists and has killed all their opportunities in the past.

Many lecturers at our larger hospitals with schools, up and down the country, besides those more concerned in London, in their inaugural sessional addresses have referred to the unsatisfactory state of the Licence alone in the Colleges' qualifications. So, after the years of strenuous agitation, it does seem strange that the aspirations of the Fellows and Members, and the natural desire to know how the Councils of the Colleges intend to realise them, should thus be so newly and limply set aside. If the Fellows and Members accepted such a subservient position, then the other portals, the university portals, at last more easily available for County College degrees, must inevitably predominate over them, and so end in their exclusion and extinction as practitioners, or rather as doctors in medicine.

Certain tables in my book, "Medical Reform Measures,' on this subject clearly pointed out how the College candidates were being swamped by University students; the average still remains approximately at 50 per cent. And many new points and tables to be seen in my new volume, Vol. II., in print since July, 1912, also show how this breaking up of the old Colleges, this splitting faction, tends to spoil the interests of the collegiate Members, and to play into the hands of the university possessors of office. And any further persistence in the unfortunate, if not ungenerous, *volte face* of the Councils at this juncture, or any disallowance displayed against the widely expected desire for a degree by the genuine collegiate Fellows and Members, could only severely shake the best allegiance and confidence in the leaders of the Councils of the Colleges, however much one may respect them, as I do.

The reform of the Medical Colleges advocated by me has always been to join the University system to our College system. Any other way of invoking, instead of resisting, the incompatible claims, first of a dominant College hierarchy or governing side, then of a College degree without the reform side, or lastly, the supposed superior inviolability of the University of London or other university graduates' side, must end in total negation and failure. They ought not to be touched, and therefore those offsides should be dropped in favour of the only open policy of reform for the Colleges themselves, and fully explained on the above lines in my two books above cited.

Bluntly put, if from *none* one-half of the collegiate students have risen to the stage of degrees, given, or rather seizing, their due and a reasonable opportunity, the others have a clear title to possess what the similar half has already risen to. And if denied, assuredly in time the others would do the same; and both the use and traditions of the Colleges and Members would attenuate to absorption or disappearance. This College reform is our reform; *infra* men or dull-ideal business men notwithstanding, the past or the usually temporary oppositions also notwithstanding. And surely thus the sign and the needs of the College times stand forth plainly.—I am, Sir, yours faithfully,

Jan. 6th, 1913. H. ELLIOT-BLAKE.

*** Owing to the elliptic nature of the style adopted, the meaning of this letter is not always clear, but we print it because of Mr. Elliot-Blake's sincere and persistent advocacy of his reform measures. The arguments for and against the one-portal system have been set out over and over again in the columns of THE LANCET, and it is certain that its institution is more favourably regarded now than it was a few years back among those to whom official position lends influence. The affiliation of the Royal Colleges with the Universities for the purpose of obtaining degrees is not the simple matter that Mr. Elliot-Blake thinks. He is pointing out a possible development which has received the anxious consideration of many men for many years.—ED. L.

THE SENIOR FELLOWS OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

To the Editor of THE LANCET.

SIR,—Please allow me to remind you that Dr. Dickinson was the *third* in seniority of the Fellows of our Royal College of Physicians, not the second, as stated in your admirable obituary notice of Jan. 18th, his Fellowship dating 1865, and Sir Herman Weber and Dr. Odling, of Oxford, both being his seniors with Fellowships of the year 1859.

I am, Sir, yours faithfully,

Birmingham, Jan. 20th, 1913. JAMES SAWYER.

A REGISTERED UNION OF MEDICAL PRACTITIONERS.

To the Editor of THE LANCET.

SIR,—As there have been many inquiries as to whether any attempt has been made in Leicestershire to carry out the trade union policy which I with others advocated at the Liverpool meeting of the British Medical Association last year, may I, through your columns, inform those interested in the matter that, in accordance with the unanimous resolution of a large meeting of the practitioners of Leicestershire and Rutland, a committee was appointed to take action thereon. Articles and rules were drafted in consultation with counsel, and submitted to the registrar; a certificate of

registration under the Trades Union Acts has now been received. A copy of the rules will be forwarded to any one desirous of obtaining one on receipt of 1*s.* by the secretary of the union, Mr. R. Wood, 6, Market-street, Leicester.

I am, Sir, yours faithfully,

R. WALLACE HENRY,
Chairman of the Union of Medical Practitioners.

Leicester, Jan. 18th, 1913.

THE MEDICAL PROFESSION AND THE NATIONAL INSURANCE ACT.

To the Editor of THE LANCET.

SIR,—A majority of the medical practitioners throughout the country having agreed—albeit, in most instances, under stress of force *majeure*—to work the Act, at any rate during the provisional three months' period, the Representative meeting has reluctantly released those of us who remained loyal to our pledges. For good or ill the medical profession is now launched upon contract practice on a far larger scale than ever existed before, and private practice, at all events amongst the working and lower middle classes, is apparently doomed. For this consummation we have to thank no one but ourselves. We have coquetted with contract terms too long. There are too many amongst us, even of our leaders, who are evidently wedded to contract work—at least, their support of the principle of a fair wage for work actually done, which one would have thought incontestably just, has been so faint-hearted that an honest earnest opposition would have been far better for the cause.

In my opinion, apart from the numerical strength of the capitationists in the profession, the chief cause of our recent debacle has been the total lack of reliable data for estimating the true worth of the Government's offer. The Government, of course, many of its supporters, most Labourists and Socialists, and apparently also some doctors, consider it most generous, and actually speak of the "endowment of the medical profession." They allow themselves to be influenced by its face value, forgetting that to a large extent what is given with one hand is taken away with the other. The only data at present available are based on the returns of Friendly Societies, provident dispensaries, and the "Plender Report," none of which are, in my opinion, fair criteria of the conditions as they will be under the Insurance Act in its present form.

The whole question hinges upon what fee we are really going to receive per unit of work done, and my chief object in writing is to earnestly ask every medical man who is working under the Act to take the trouble to ascertain this amount for himself. The calculation will not involve much extra trouble. He has to keep a record of every item of attendance for the Insurance Committee, therefore he has only to price these (theoretically, of course, and for his own information) according to the scale of fees agreed to in the British Medical Association scheme—viz., 2*s.* 6*d.* for an ordinary visit, 3*s.* 6*d.* for a "special visit," 5*s.* to 7*s.* 6*d.* for a "night visit," 1*s.* per mile (over one mile) for mileage, 1 guinea each for anæsthetics, fractures, dislocations, poisoning cases, 1 to 3 guineas for operations, &c. To ascertain the amount actually received per ordinary visit one deducts the total amount of all the above "extras" from the total capitation fees received and divides the remainder by the number of ordinary visits paid. If this be done at the end of the three months' period we shall be in a position to say positively whether or not we are being adequately paid for our work. Should the amount work out at anything near 2*s.* 6*d.* per visit we may safely continue for another three months, as the spring months are probably lighter in morbidity than the winter months. But should we find, as I apprehend will be the case, that the remuneration works out at less than 1*s.* per ordinary visit after deducting legitimate extras, then I say we must demand from the Government a higher capitation fee or insist upon payment for work done at a proper tariff of fees.

To those who think the campaign is over, and that we doctors are hopelessly routed, I would say that the campaign has merely begun, and that the loss of the first battle should only rouse us to renewed effort. We are fighting for the future of medicine in this country, and justice is bound to triumph in the end. The methods of the Chancellor are autocratic and mediæval in the extreme, but liberty is too sturdy a flower in the English garden to be trampled out of existence by the heavy heels of the doughtiest politician.

I am, Sir, yours faithfully,

P. R. COOPER, M.D. Lond., F.R.C.S. Eng.

Bowdon, Cheshire, Jan. 19th, 1913.

To the Editor of THE LANCET.

SIR,—In the agreement I signed to treat patients under the Insurance Act the date fixed provisionally was April 14th, 1913. What, then, is the explanation that the cards brought by patients are available till April 30th, 1913?

I am, Sir, yours faithfully,

Leagrave, Jan. 14th, 1913. JOHN ROLLINGS.

Dr. Charles Ruata, the distinguished professor in the University of Perugia, asks us to give publicity to the fact that in his letter on the Continuous Inhalation Treatment of Tuberculosis in THE LANCET of Nov. 23rd, 1912 (p. 1463), the first paragraph, as originally written, concluded as follows: "I think that some one might be interested to know the experience of the medical man who first introduced into practice such a method of treatment." Professor Ruata desires that it should not appear that in Italy he claims one thing and in England another, and we publish his correction with pleasure, but without in any way endorsing his claim.—ED. L.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

King Edward VII. Memorial.

ON Wednesday, April 23rd, Her Royal Highness Princess Louise will lay the foundation-stone of the new Children's Hospital in Ladywood-road and unveil the statue of King Edward VII. which is to be erected in Victoria-square. These two enterprises are the city's memorial to the late King. The Princess will be accompanied on her visit by her husband, the Duke of Argyll. The old hospital in Broad-street was nearing a crisis. The buildings were quite inadequate and unsuitable for modern work, and the lease had but a few years to run. The governors had issued an urgent appeal to the public for funds sufficient for the rebuilding of the hospital on a new site, but the response was small owing to the heavy calls that had been made in connexion with other charities in recent years. The appeal yielded sufficient for the purchase of the site, but the cost of the buildings was estimated at from £50,000 to £60,000. Shortly after the death of the King the *Birmingham Daily Mail* opened a memorial fund and there was a generous response. In a very few months £30,000 were raised. Collections were made in workshops; there was a house-to-house canvass by voluntary workers, and several of the neighbouring districts raised local funds for the endowment of cots. To-day the governors have about £48,000. It is expected that the building will be completed by the beginning of 1915, and the governors have two years in which to raise £13,000 if the institution is to be opened free from debt.

The National Insurance Act.

The complete list of the doctors on the panel shows that every district is well represented and an efficient service is ensured. Owing to the large amount of sickness prevalent at this time it has been an almost impossible task for these doctors to keep up with the clerical work involved in the registration of patients who have been seen in many cases waiting in long queues outside surgeries to get the doctor's signature.

A good deal of dissatisfaction is being expressed in some quarters at the composition of the Local Medical Committee. It is held to be unrepresentative of the profession generally because of the large proportion of general practitioners who are not on the panel to those who have accepted service under the Act, and also because there is no practitioner resident in Handsworth connected with it. The Committee was, of course, constituted by ballot at a general meeting of the profession, but there is no doubt that the Committee mainly contains the nominees of those who were opposed to

working the Act, and that the important minority present at the meeting who were in favour of giving the Act a trial did not succeed in electing their representatives. The grievance of the Handsworth doctors will be removed by coöpting one of their number. It was decided that the Committee should hold office for 12 months.

The Hospital Saturday Fund has not yet suffered to any appreciable extent, and certain firms who at first decided to withdraw are continuing their subscriptions. Most of the important firms are subscribing, and altogether it is not thought that there will be any appreciable falling off in the total amount subscribed.

The various hospitals have decided after Feb. 15th not to treat insured persons except those requiring first aid or treatment which can only be given in a hospital. All patients will be examined, and if not coming in the above categories will be referred to their panel doctors.

Jan. 21st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Annual Dinner of the Royal College of Physicians.

THE President and Fellows of the Royal College of Physicians of Edinburgh gave their annual dinner in their hall, 9, Queen-street, on Friday, Jan. 17th, when a large number of representative members of the medical profession and guests were present. Dr. J. J. Graham Brown, the President, presided, and the speaking was of a high order at a very successful gathering.

Medical Inspection of School Children in East Lothian.

The school medical inspector, Dr. Buchanan, remarks in his report for last year upon the general improvement noticeable in the condition of children with regard to whom defects had been previously pointed out. Referring to the necessity of keeping the head clean, he mentions that, as it is of course impossible to expect mothers to keep the hair short, much can be done by plaiting it, thus rendering infection much less likely than when the hair is worn loose. Conservative treatment in the way of stopping teeth he considers impracticable for country children, and although the unsatisfactory feeding as a primary cause all through is important, and worthy of every effort for its correction, emphasis should be given to the advisability of brushing the teeth at night as well as in the morning. Referring to the difficulty of obtaining suitable glasses for the children requiring them, he suggests as a remedy the supplying of the medical officer with the requisite testing apparatus, and some arrangement with opticians for the supply of the prescribed glasses at a reasonable rate. He remarks that many children presented by the teachers as suffering from adenoids merely suffer from obstructed nasal passages due to their inability or mere unwillingness to blow their noses properly; every child should, therefore, be provided with a handkerchief of some sort, and should be made to use it properly and reasonably often.

State Insurance amongst Miners.

At a largely attended meeting of Midlothian miners it was, after discussion, unanimously decided to accept the recommendations of the Scottish Miners' Federation regarding the medical attendance on the wives, families, and dependents of members. These recommendations, it will be remembered, are as follows, and have been widely accepted over the country:—

1. That a flat rate be paid by all workers over 16 years of age, half rate between 14 and 16.
2. That, upon the money being deducted at the colliery office, it be lodged at the bank in the name of a committee of workers, who would issue cheques and pay each doctor in accordance with the proportion of persons paying for him.
3. The workers to have absolutely free choice of doctor from the panel.
4. The rate of payment proposed is 1½*d.* per week without medicine, or 2*d.* per week with medicine.

Legacies for Glasgow Infirmaries.

The executors of the late Mr. Edward Davis, of Glasgow, have allotted £40,000 to the Glasgow infirmaries—viz., £15,000 to the Royal Infirmary, £15,000 to the Western Infirmary, and £10,000 to the Victoria Infirmary. The allocation to the other Scottish infirmaries will be made some time in March.

Aberdeen Friendly Societies and the Doctors.

The Aberdeen burgh Local Medical Committee has circularised the local doctors in the following terms:—

> The Local Medical Committee are negotiating with the Friendly Societies regarding the medical treatment of old, and disabled, and other uninsured members of societies, who are earning an income under the income limit, at terms not under those for insured persons. All members of the profession are therefore warned that they must make no private arrangement with such individuals or the societies to which they belong. Recognising the necessity of attending those persons meantime, the Local Medical Committee suggest that any medical practitioner may attend those persons at the rate of 7*s.* per annum without medicine until negotiations are complete.

It is understood that a conference will be held immediately between the Local Medical Committee and the representatives of the Friendly Societies on the question of medical benefit to persons over 65 years of age. The Friendly Societies are willing to give 4*s.* 6*d.* per head, but the doctors desire the same sum as for other insured persons. There is a proposal to group all those persons together and appoint a doctor to give them medical attendance.

Orkney Doctor's Hazardous Journey.

Apropos of the difficulties of medical attendance in the Highlands and islands the following is interesting. On Sunday last a telegram was despatched to Stromness for medical attendance for a crofter on the island of Hoy who lay dangerously ill. There was a heavy gale raging, and no communication between the islands had been possible for days. Nothing short of the lifeboat had a ghost of a chance on the water, so accordingly the local lifeboat, a powerful motor vessel, was manned with a scratch crew and launched, and successfully negotiated the raging sound. A landing had to be effected among the rocks at Hoy, there being no pier. All was done in safety, however, the sick man treated, and a return made.

Extraordinary Case in Aberdeen Infirmary.

An interesting case has recently been treated in Aberdeen Royal Infirmary. A married woman, who was a patient there, was operated upon, when no fewer than 73 ordinary pins, 11 hair-pins, and a small piece of steel were found embedded in the bowel. The woman is unable to account for their presence there, the only possible explanation being that for a considerable period she had during sleep extracted a pin from her nightdress and swallowed it. The patient is recovering.

What Sanatorium Treatment is going to Cost Dundee.

At a meeting of the Insurance Committee, held in Dundee on the 15th inst., the Sanatorium Benefit Committee put forward the following estimate of expenditure for the year, prepared by Dr. C. Templeman, the medical adviser, in connexion with sanatorium treatment of insured persons:—

Sanatorium treatment during the year of an (estimated) average of 40 insured persons at £1 15*s.* per week ...	£3640
Hospital treatment during the year of an (estimated) average of 60 insured persons at £1 5*s.* per week ...	3900
Dispensary treatment...	100
Salary of medical adviser, proportion of, say, £500 ...	200
	7840
Deduct grant of 9*d.* for each of, say, 58,000 insured persons	2175
Showing a net estimated deficiency of...	£5665

payable one-half by the Treasury, and one-half by the town council. The proposal was made to reduce the estimate to £1 5*s.* per week for sanatorium treatment, and to 17*s.* 6*d.* per week for hospital treatment. The estimates were, however, finally approved. The number of insured persons in Dundee is 58,630, consisting of 29,160 male and 28,999 female members of Approved Societies, and 352 male and 119 female deposit contributors.

Inauguration of the National Insurance Act in Aberdeen.

Insured persons in Aberdeen are showing great activity in selecting their doctor under the Act. The red ticket is much in evidence, and evidently the impression prevails that it must be presented at the earliest possible moment to the medical man, whether his services are required or not. The work at the infirmary is going on as usual irrespective of whether the patients are or are not insured. A record, however, is being kept of the number of patients who are insured, so that by the end of three months statistics may be

available as to what extent insured persons are benefiting from the infirmary.

The National Insurance Act in Sutherlandshire.

The panel of doctors willing to give service under the National Insurance Act was completed up to time in Sutherlandshire. Taking area and population into count the number of insured persons is under the average. Up to the present only 3000 slips have been returned by the societies to the Insurance Committee, these being divided between 39 different societies. Almost one-fifth of the insured population are resident in the Dornoch district. As yet not a single application for sanatorium benefit has been received by the County Insurance Committee. The deposit contributors do not exceed 50, and even some of those will eventually find their way into societies. There are still a few "resisters" in Sutherlandshire, but those must fall into line when liability arises.

Jan. 20th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Upkeep of the Collier Dispensary, Dublin.

SOME weeks ago the Dublin corporation took over charge of the Collier Tuberculosis Dispensary from the Women's National Health Association with the intention of making it the centre of the tuberculosis campaign in Dublin. It now appears, however, that the corporation, though in possession of the dispensary, has no funds to maintain it. It is stated that, no provision having been made in the annual estimates, no funds can be advanced from the rates in the current financial year. Before provision can be made there are some three months to run. At present it is understood that the members of the staff are unable to obtain their salaries, and there is grave danger of the dispensary being, at any rate temporarily, closed. The corporation, being involved in this difficulty, suggests that the blame lies with the Insurance Committee, which was not consulted as to the propriety of purchasing the dispensary and has no share in its management. At a recent meeting of the Insurance Committee a letter was read from the corporation demanding monthly payments to cover the cost of maintenance, and more recently the threat was held out that the dispensary would be closed if the committee did not find funds. Up to the present no patients have been sent to the dispensary by the Insurance Committee, which therefore repudiates all responsibility. It is to be hoped that matters may soon be arranged between the committee and the corporation, as it would no doubt be unfortunate if the dispensary were to be closed. The affair is typical of the confusion which exists throughout Ireland on the relations between the administration of the sanatorium benefit and the general campaign against tuberculosis.

Honour for a Dublin Physician.

His Holiness the Pope has nominated Sir Joseph Redmond, an ex-President of the Royal College of Physicians of Ireland, to be a Knight Commander of the Order of the Holy Sepulchre. Sir Joseph Redmond is one of the physicians to the Mater Misericordiæ Hospital, Dublin.

Scarlet Fever in Londonderry.

On Jan. 14th it was stated at a meeting of the Public Health Committee that there was an outbreak of scarlet fever in one small and confined area, 23 cases having been notified in the city. The cases are said to be mild.

The Belfast Medical Students' Association.

At a public meeting on Jan. 18th, held under the auspices of the Belfast Medical Students' Association in the McMordie Hall of the Queen's University Students' Union, Dr. R. A. Kerr, the president, gave an inaugural address on "Medical Education before the Medical Act, 1858," and Professor A. C. Geddes (Dublin) followed with a lecture on "Growth and Growing Old." The usual votes of thanks were passed.

Sanatoriums and Dispensaries in Co. Londonderry.

The maintenance of these institutions will be considered at the February meeting of the county council, but it is clear that no permanent scheme will be settled for the treatment of consumptives until it is decided what contribution the Treasury will make, and also what income will accrue from insured persons in the county. Only when these questions are answered can it be decided what amount will have to be raised through the rates to cover the certain deficiencies.

Jan. 21st.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Responsibility of the Medical Man.

IN 1905 a female postal employee, 20 years of age, whose cheeks and chin and neck were disfigured with a thick growth of hair, applied to Dr. D., a well-known Paris physician, to rid her permanently of the embarrassing encumbrance. The doctor subjected his patient to the X rays, and the girl was severely burnt, so that in place of hair her neck is now covered with scars. Alleging that the doctor had been culpable in his method of application of the rays, she brought suit against him for 20,000 francs in the Tribunal of the Seine. Failing in the lower court, she appealed, and the case, which has been going on for eight years and has given rise to two medico-legal inquiries, was heard on Jan. 17th before the Fifth Chamber of the Court. The Advocate-General held that the liability of the medical man was clearly established, for he had failed in his duty, knowing that he was engaged in procedures intrinsically dangerous, by absenting himself for however brief periods in place of exercising unbroken watchfulness over the operation, and, further, that it was his duty to warn the girl that the operation was uncertain and dangerous, which he appeared not to have done.

The Acoustics of Meeting Halls.

On Jan. 14th Dr. Castex read a paper before the Academy of Medicine on the relation between the acoustic properties of meeting halls and hearing and phonation. Undoubtedly, he said, the acoustics of many halls were excellent, but in other cases they were very bad. There were yet others in which the acoustic properties were satisfactory for the audience but deplorable for the speaker, on account of the strain imposed on him, and *vice versâ*, though the reason of these differences was not clear. Halls might be bad by reason of deadness, of over-resonance, or on account of echo. The materials used in construction undoubtedly exercised an influence. Wood, glasswork, and marble afforded good resonance, draperies bad. Stone and plaster were regarded as neutral. In course of time, moreover, the drying of the material improved its sonorousness. Cupolas created unfavourable conditions, which exaggerated resonance. Speaking generally, good halls were those in which one of the dimensions exceeded the other. Round and square halls were less satisfactory. Curiously, the slightly deaf heard less well in certain halls than in the open air.

A Beneficent Act.

Dr. Martel, who in 1912 gained the Barbier prize of the Faculty of Medicine for his method of trephining, has generously presented the prize, which amounts to 2500 francs, to the Maison du Médecin.

The Treatment of Amœbic Dysentery by Sugar Enemata.

According to the researches of M. Cohendy, enemata of sugar, combined with appropriate regimen and suitable altitude, are of real efficacy in the treatment of dysentery. The enema is prepared by mixing in a vaginal douche 250 grammes of the syrup of sugar of the French codex with three litres of boiled water cooled to 60° C. When the bowel is especially intolerant six drops of laudanum are added. The whole amount is administered, if possible, at one injection, and retained from 20 to 25 minutes by lying first on the back and subsequently on the side. When there is excessive weakness an enema is at first prescribed both morning and night. When the number of stools is reduced by two-thirds only one enema daily is given. When the stools have become pasty and do not exceed three in the 24 hours, only one enema every two days is given, in the morning. An enema every two days may advantageously be continued for ten days following the re-establishment of normal movements.

Dentists and General Anæsthesia.

Two surgeon dentists have been prosecuted for the illegal practice of medicine, having resorted to general anæsthesia

for the extraction of teeth. The decree of the court stated that surgeon dentists who qualified subsequently to the Act of Nov. 30th, 1892, having undergone special and appropriate instruction in surgery, had undoubtedly the right to use anæsthetics for their operations without the necessity of employing a medical man, and that no distinction in this respect existed between local and general anæsthetics. On the other hand, this right imposed on them the observance of all proper precautions, the neglect of which would expose them to civil and penal liability. As both the dentists belonged to the above category they were acquitted.

The Skull of Descartes.

Dr. Paul Richer, professor of anatomy at the Ecole des Beaux Arts, who is a talented sculptor and engraver of medallions as well as a member of the Academy of Medicine and the Académie des Beaux Arts, has completed the investigation imposed on him, in conjunction with M. G. Darboux, for the identification of the alleged cranium of Descartes, by comparing it with the different portraits of the philosopher. On a plaster mould furnished him by the museum Dr. Richer pointed out first the clearly marked distinctive characteristics which correlate this cranium with the portrait of Descartes painted by Franz Hals. M. Richer has pursued this method of comparison as strictly as possible, to reduce to a minimum the influence of the personal equation. His method was to make from the portrait by Hals a drawing of the cranium as closely corresponding thereto as possible. A drawing of the skull in the museum was then made in like manner from exactly the same point and to the same scale, and one drawing was then superposed on the other. The first procedure is one of greater strictness than would at first be supposed, and leaves little room for the influence of the imagination. Indeed, a head presents a certain number of precise bony points of indication which Dr. Richer enumerates, and which are particularly apparent in the painting of the Dutch master. These same points are repeated on the mould of the cranium in the museum. By the help of these marks it was easy to place the cranium of the museum with mathematical precision in the position given by Hals to his sitter, and to determine the exact dimensions of the image that it would be necessary to take of it to make the comparison logical and demonstrative. The superposition of the drawings made respectively from the painting and from the cranium in the museum showed an almost exact correspondence. Other drawings, executed under the same conditions from many crania taken at random, on the other hand, showed notable points of difference from the drawing of the portrait by Hals. The same experiment has been repeated with other portraits of Descartes. The comparison of the skulls thus drawn from these different portraits with that of the museum shows sometimes very striking resemblances, but never so complete an agreement as in the case of Hals's portrait. Leaving aside all historical conclusions, the upshot of Dr. Richer's investigations is that the skull preserved in the museum corresponds almost absolutely with that indicated in the portrait of Franz Hals.

Jan. 20th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Effects of School Education on the Health of Children.

THE Austrian Society for School Hygiene is at present making preparations for an investigation on a large scale into the effects which school education produces on the health of children, special attention being directed to two well-recognised sources of mischief—namely, faulty design of school buildings and faulty educational methods. As regards the buildings, which were originally erected for other purposes and subsequently converted into schools (a frequent course of events in Austria), they as a rule are failures from the hygienic point of view on account of their insufficient admission of fresh air, incorrect lighting, and lack of heating arrangements. The second of the two factors above mentioned is perhaps even more important than the first. It has been proved by statistics that whilst over 90 per cent. of all children entering the school at the age of six years have normal sight, myopia makes itself unpleasantly obvious in the second year, and increases so much in the higher standards that in the "Latin schools" and higher schools over 60 per cent. of the pupils have to wear spectacles. It has also been found that anæmia and scoliosis, not the results of infectious diseases, are frequent concomitants of school attendance. The origin of these abnormal conditions is known, and the prevention of them is one of the objects of the society. In the investigation evidence will be received not only from specialists in the diseases of children but also from general practitioners and experts in various branches of medicine, and attempts will be made to trace the subsequent history of children known to have become ill during school-life.

Congress of Medical Officers of Health.

A short time ago the first meeting, or rather Congress, of the Austrian Medical Officers of Health took place in Cracow, and some of the papers read on this occasion were of general interest to the profession. One of them raised the question of that comparatively rare condition, scleroma, and in the ensuing discussion several speakers recommended that it should be included among the diseases subject to compulsory notification. An international conference was also suggested on this subject, the conclusions at which it may arrive to be submitted to the governments of the countries affected by that disease—namely, Austria-Hungary, Germany, Russia, the Balkan States, Spain, and Sweden. Lately, cases have been reported also from the United States of America. The disease seemed to be increasing, but this is perhaps owing only to the better means of diagnosis now at our disposal. An interesting paper dealt with the medical institutions of certain large industrial undertakings. There are in Austria several very prosperous factories and industrial corporations whose premises may be regarded as towns in which many thousands of workpeople are employed. Of late a very commendable system has been introduced, under which, in some of them, medical attendance and sanitary dwellings have been provided for the workers. In the paper referred to an account was given of the hospitals, the schools, the medical supervision, the accident or first-aid appliances, and the arrangements made for the care of the infants to be found in these works. Altogether the standard of hygiene attained in them is much higher than anywhere else in industrial or commercial enterprises in Austria. Another paper gave interesting details as regards the methods used in this country for dealing with town refuse. It was stated that the attempts which have been made to obtain electricity or steam power by the burning of this material have not been successful financially, and that better prospects are offered by using suitable kinds of town refuse as fertilisers for agricultural purposes. This seems to be the method of the future for middle-sized towns.

The Increased Cost of Living in Austria.

The steady advance in the cost of all articles of food as well as of house rent is having an injurious effect on the public health, and the fact that a large proportion of the population is underfed has been officially admitted in connexion with the results of recruiting for the army. Austria is being rapidly transformed into a manufacturing country, the agricultural part of the population now forming less than 40 per cent. of the total. The recruits coming from towns are, as a rule, less well fed than those from the country, unless they belong to well-to-do families. An interesting account of the existing conditions has been furnished in a paper written by Mrs. Granitsch, and read before the Union of Austrian Housewives. She quoted official figures of market prices which prove that the cost of all articles of food has gone up within the last six years by an amount ranging from 18 to 40 per cent. Milk has gone up 30 per cent.; meat, 40 per cent.; sugar, 25 per cent.; flour, 25 per cent; vegetables, 50 per cent.; and fruit, 30 per cent. Among the lower middle class in the population of Vienna the average consumption of meat has gone down to about three ounces per head, because people have "to keep up appearances." The infant mortality has gone up in the same classes to 24 per cent. of all births, whilst the labouring classes, who can spend comparatively more of their income on food, show an infant mortality of 17 per cent. House rent has also gone up during the same period to the extent of 30 or even 100 per cent. Overcrowding, with its natural consequences, tuberculosis and increase of infectious disease, is inevitable.

Jan. 20th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

University Reform.

THE Royal Commission upon University Reform has just concluded its labours. The *Tribuna* publishes a long interview with the Senator, Professor Durante, as to the conclusions of the Commission. The members were totally unable to agree upon a number of important points, so that the report to be presented to Parliament is a Majority report, and Professor Durante, with the deputies Torre and Manna, and possibly some others, propose to present their views in a Minority report. The chief difficulty in the matter is the large number of universities existing in Italy. Some of these have but few students, so that the relations of teachers and students are apt to become too intimate for a just appreciation of the students' merits when under examination, or the professors may show themselves too lenient in order to attract students to their university. The necessity for a State examination to admit to the practice of the various professions was admitted by all members of the Commission, but while the majority was in favour of holding the examination at each university with an examining body formed of the local professors with one Government representative, the minority advised that there should be a single examining body composed of all the best teachers in the kingdom, and with Rome for its headquarters. One advantage of this proposal, according to Professor Durante, would be the natural extinction of the superfluous and less competent universities. The smaller universities would be unable to compete on equal terms with the universities in the larger centres, and their students would find themselves in a position of inferiority when competing with candidates from universities where the teaching was better. In this way the students would naturally desert the less efficient teaching centres. Another advantage which might be added to this plan regards the questions of the age-limit for professors and the professorial career. At present university professors must retire at the age of 75, unless by the advice of the Higher Council of Education the Minister maintains them at their posts as being physically and psychically equal to their duties. The Higher Council must base its judgment upon reports furnished by members of the same faculty, members who at no distant date will find themselves in the same position as the professor under consideration. Hence these reports are always favourable, since the givers have an interest that the age-limit law should be interpreted with as little strictness as possible. Another difficulty under the present system is that certain professors, once they have obtained their nomination, pay little attention to their teaching duties. They have obtained the highest position open to them and rest upon their laurels. There should be some stimulus to further work, and this would be provided by the State commission of examiners, to be selected from among the most distinguished teachers. The minority would propose that at 65 every professor should be a candidate for the State commission of examiners. If elected he would remain upon the commission up to 70, at which age he and all university professors would have to retire; but he should retire upon his full salary for the remainder of his life and not upon the pension rate of the other professors. Senator Durante speaks with the authority of a distinguished teacher and an examiner of long experience, and his proposal seems to provide a simple solution of many of the difficulties of the present position. There are, however, a great many interests involved in the preservation, as far as may be possible, of the existing order of things.

The Red Cross Society.

The Croce Rossa Italiana is represented at present in the Balkans by a hospital unit from Bologna and an ambulance from Turin with the Montenegrins, a hospital from Padua with the Greeks, a hospital from Ancona with the Bulgarians, and a hospital from Florence with the Servians. This last, despatched to Belgrade just before Christmas, is a most complete hospital. Professor Burci, director of the Clinica Chirurgica of Florence, is in command, and took with him several of his assistants in the surgical clinic, while the medical direction is in the hands of Professor Baduel, of the Clinica Medica of Florence. This sending to Servia of the principal surgeon of Tuscany with his trained assistants has excited a good deal of comment. On the one hand, it is rumoured that it is a political move on the part of the Government, who has despatched a hospital unit superlatively equipped, both in *personnel* and material, to create a good impression at Belgrade at a moment when Austria has withdrawn her Red Cross units owing to the pressure of mobilisation at home. On the other hand, it is whispered that the Croce Rossa welcomed the opportunity to retrieve its reputation, somewhat tarnished by the campaign in Libya, where the lack of discipline in all ranks impaired the value of the work of some of the Red Cross hospitals and ambulances. By sending a hospital under the command of a senior hospital surgeon, and with the subordinate officers selected from among his own clinical assistants, the central committee of the Croce Rossa might well feel that it could with confidence face criticism in a foreign country.

Bassini Institute for the Cure of Hernia.

There was opened in Milan the other day, in the presence of the Count of Turin, the Prefect, the Mayor, and a large number of notabilities, including Senator Bassini, the Bassini Institute for the cure of hernia among the poor. The occasion was made one for a demonstration of sympathy with, and admiration for, the famous surgeon "who," in the words of the Hon. Falcioni, representing the Government at the inauguration, "before he devoted his mind to science dedicated himself to the service of his country as a volunteer with Garibaldi." The institute, which owes its existence to the initiative of Professor Preto, has been erected out of funds raised by a public subscription started by Professor Bassini in July, 1909.

Jan. 20th.

NOTES FROM SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENT.)

Unification of the Peninsula Municipalities.

CLUSTERING round the base of Table Mountain are no fewer than nine different municipalities—namely, Cape Town, with a population of 68,742; Sea Point, with 9411; Woodstock, with 28,693; Maitland, with 5762; Mowbray, with 9272; Rondebosch, with 5626; Claremont, with 13,329; Wynberg, with 16,014; and Kalk Bay, with 3526. The municipalities of Cape Town, Sea Point, Wynberg, and Kalk Bay have a sufficient water-supply for their own needs and underground systems of drainage. The other municipalities are without proper water-supplies and are unsewered. The sanitary conditions of the latter are far from satisfactory, and just outside their boundaries slums have grown which are a menace to the health of the whole area. For years the question of unification appears to have been discussed, but the matter so far has never apparently been within the range of practical politics. Last year, however, a conference assembled, and after prolonged discussion evolved a scheme under which it is thought that the municipalities should be able to unite. This scheme is now to be put before the ratepayers of each municipality, when it is hoped that it will be ratified, so that an enabling Ordinance can be introduced into the Provincial Council during the next session to give effect to the partnership. It is probably only by unification that the peninsula can be placed in a proper sanitary condition and thus establish its claim to be not merely the Parliamentary capital of the Union but the leading health resort of South Africa. To the casual visitor it has always been a matter of astonishment that the area should have remained so long under the control of a number of petty local authorities.

Reorganisation of Asylums.

It is rumoured in Pretoria that the Government has at length decided on its policy in connexion with the reorganisation of the asylums in the Union. Under the proposed scheme the asylum at Bloemfontein is to be largely increased and will become the criminal lunatic asylum. The other asylums will be graded each for a different class of patient. Practically all available funds will be spent on the Bloemfontein Asylum, and the accommodation freed by the transfer of criminal lunatics thither will relieve

the congestion at other asylums. The scheme sounds attractive, but as the Government is without any recognised medical adviser on questions of asylum policy, and as so far most of its medical administrative work has not been much of a success, it would perhaps be safer to suspend judgment until full details of the scheme have been made public.

Dec. 17th, 1912.

NEW ZEALAND.

(FROM OUR OWN CORRESPONDENT.)

Medical Inspection of Schools.

AT last, after much discussion and much urging, New Zealand has undertaken the medical inspection of the children attending the State schools. Four inspectors have been appointed, two male and two female, at a salary of £500 per year. Roughly speaking, there are some 132,000 children attending the schools, and as the schools are spread over an area slightly greater than that of England and Scotland it can easily be seen that some time must elapse before an effective result can be obtained; still, the data acquired will be of great value from both the educational and ethnological point of view. The influence of better climate and easier economic conditions upon child life can by-and-by be investigated. Judging from the very meagre data already acquired it would seem that, age for age, the New Zealand child is taller than the English school child, but that just as many suffer from bad teeth, adenoids, and imperfect vision as at home. The question of how the defective children are to be treated has occasioned much discussion, and it is satisfactory to learn that the present Government has decided not to interfere in any way with the work of the ordinary medical practitioner. The tendency in these democratic colonies is to thrust every burden upon the State, but the profession here has made its voice heard, and the Ministers responsible have openly invited the help and counsel of the medical profession in this work. This is as it should be.

Maternity Homes.

One of the last, and perhaps best, of the acts of the late Mr. Seddon was the establishment of maternity homes, where the wife of the working man could receive skilled attention in suitable hospitals at her confinement. The charges are moderate and the attendants are all properly trained. Considerable discussion, however, has lately taken place as to their administration, and some rather acrimonious criticism and rejoinders have been published. A magisterial inquiry is now being held into the working of the Auckland Home.

The Australasian Medical Conference.

The next meeting of the Australasian Medical Conference is to be held in Auckland early next year, and Dr. A. Challinor Purchas has been elected President.

The Immigration of Consumptives

The question of immigration has occupied the attention of the Government lately. There is need of a greater population in New Zealand, but it has been pointed out that many who have arrived lately have been far from suitable, from a health point of view, to take up the kind of work which is available. Several have landed suffering from consumption in such an advanced stage as to require hospital or sanatorium treatment within a short time of their arrival in the Dominion. It is impossible to impress too strongly on the profession at home the unwisdom of recommending indigent consumptives to "go to the colonies." Every endeavour is made by the authorities to stop such patients landing, and should they pass the cordon their lot is not a happy one. The Government now proposes to appoint a permanent medical officer in London to examine all immigrants before they embark. For two years they had such an officer in London and great good resulted from his work. It would be well for any medical man, before recommending a poor patient to come to New Zealand, to communicate with the High Commissioner, 13, Victoria-street. In this way much trouble would be saved.

Dec. 12th, 1912.

Obituary.

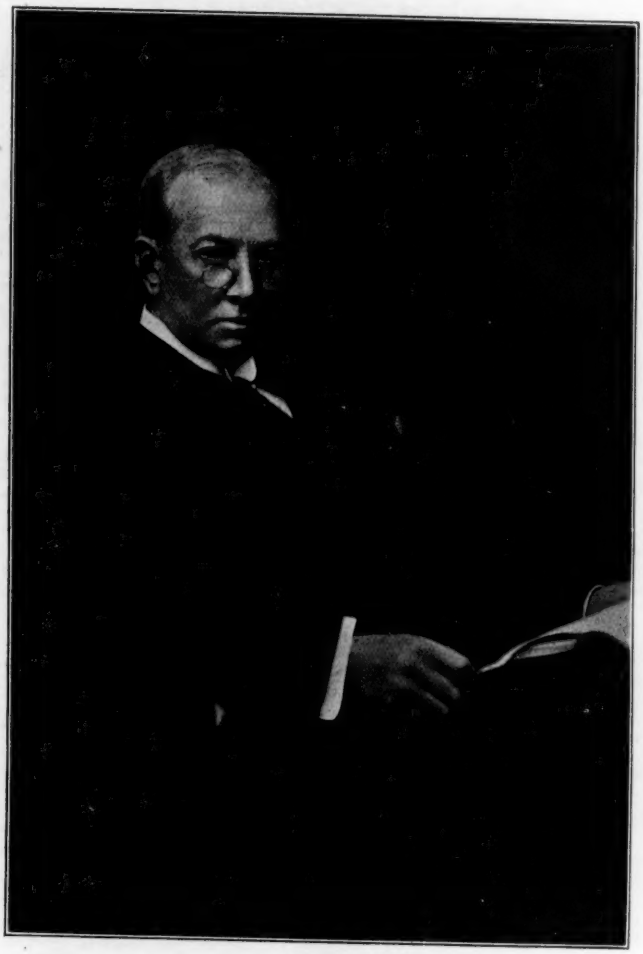
GEORGE ALEXANDER GIBSON, M.D., D.SC. EDIN., LL.D. ST. AND., F.R.C.P. EDIN. & IREL., &C.,

MEMBER OF THE GENERAL MEDICAL COUNCIL; CONSULTING PHYSICIAN TO THE DEACONESS HOSPITAL; PHYSICIAN AND LECTURER ON CLINICAL MEDICINE TO THE ROYAL INFIRMARY, EDINBURGH.

SCOTLAND has lost a brilliant member of the medical profession and one of its leading physicians by the death of Dr. George A. Gibson. The intimation of his death has come as a shock to many, for the serious nature of his illness was not widely known. That a man of 58 years, in the full tide of his usefulness and prosperity, should be prostrated by illness from which he rallies only to be again and again prostrated until the "silver cord" breaks will ever impress men with a sense of helplessness and of ignorance, for beneath it all lie the problems of life. We medical men know what it is to feel thus, and those of us who knew Gibson intimately feel it very specially. The generous, cordial greeting of a nature full of brightness and overflowing with a vitality which seemed to be communicable we know now only as a memory. Life is duller and greyer in Edinburgh by the loss of such a living, active, vigorous, and genial personality from amongst us. No man can take Gibson's place, for there is no one like him, no one who has the characteristics which distinguished him, which made him the centre of many interests in Edinburgh, and one to whom men turned for sympathy and help. It is the *man* we specially mourn, and in doing so we thank God for men of high and honourable ideals, whose characters have never been stained by the mean and contemptible things of life—men who stand for honour, for truth, for straight dealing. And Gibson was one of those men. Having said so much in an endeavour to express the first thought that arises in men's minds as they hear that Gibson is dead, we may pass to a consideration of his professional life, while recognising that it was necessarily determined and coloured by the innate character of the man.

Gibson began the study of medicine in Edinburgh in 1872. Having spent two years at Glasgow University before going to Edinburgh he took the degree of Bachelor of Science at the latter University in 1874, and obtained the Falconer Memorial Fellowship in Geology. His student career was marked by the place he took as a student of science. In medicine the influences which most affected his future were the interest he took in anatomy under the teaching of Professor, now Sir William, Turner, his clerkship with Professor Lister in the Surgical House, and a corresponding experience under Dr. George W. Balfour in the Medical House of the old Royal Infirmary. He graduated in medicine in 1876 and a year later took the degree of Doctor of Science with a thesis on a geological subject. Notwithstanding the attractiveness of science and the ease with which he mastered its details, medicine proved to be still more attractive to him, and he became resident physician in the Royal Infirmary to Dr. G. W. Balfour. At that time Balfour was at the height of his reputation as an authority on heart disease, and Gibson readily turned his interest and his faculties to that line of work. He even then contributed papers to THE LANCET and the *Edinburgh Medical Journal* on the views that Balfour was contending for. His interest in scientific medicine was thus early aroused into activity. Even those early papers showed also the possession of a literary gift, and this gift continued to mark everything that came from his pen as years passed. After his period with Dr. Balfour was completed he demonstrated anatomy for some time under Professor Turner in the University, and when there formed with the late Dr. D. J. Cunningham, the senior demonstrator, one of his strongest and most valued friendships.

In 1878 he became a candidate for the post of assistant physician to the General Hospital in Birmingham, and was successful in his application. While there he was closely associated with two Edinburgh graduates whom he had known as a student—namely, Dr. Saundby and Sir Thomas Chavasse. He did not, however, remain long in Birmingham, for by the end of 1879 he was back in Edinburgh with his name on a door-plate, ready to take



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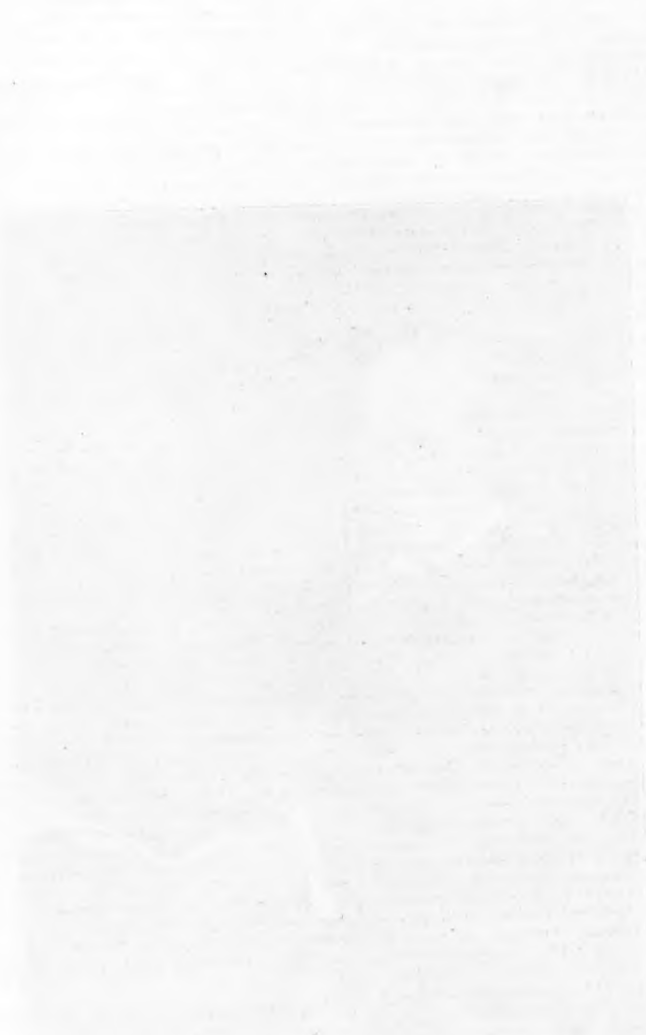

whatever of medical practice should offer. He became a Fellow of the Royal College of Physicians of Edinburgh in 1880, and proceeded to the M.D. degree in 1881. He was also elected a Fellow of the Royal Society of Edinburgh. He joined the New Town Dispensary as a member of the staff; he was appointed tutor in clinical medicine in the Royal Infirmary; he lectured on materia medica for a few years, then on practice of medicine in the Extra-mural School of Medicine. Such was the training Edinburgh men went through who aspired to the "higher walks" in the profession. They had, it is almost needless to say, abundance of leisure to extend their professional knowledge, and to acquire the art of lecturing, and of teaching students. During those years of waiting and of development Gibson wrote a number of papers on cases which came under his observation or on subjects in which he was interested. His first larger effort in Medicine was in conjunction with Dr. William Russell, in the preparation of "Physical Diagnosis: A Guide to Methods of Clinical Investigation." Dr. Russell had succeeded Dr. Gibson as clinical tutor in the infirmary, and they jointly recognised that the student needed a book of the kind they produced. For years this book was in every student's hands in Edinburgh, and it was also largely used in other schools. This book was published in 1890, and in that same year Gibson was appointed to the honorary staff of the Royal Infirmary as an assistant physician. In the infirmary he was attached to Professor Sir T. Grainger Stewart, who most generously gave his assistant physician permission to make full use of the clinical material the wards supplied. He was also given a part in the clinical instruction of the students. This was just the kind of opportunity Gibson required, and he availed himself of it to the uttermost. Two years later he published a brochure on "Cheyne-Stokes Respiration." In 1898 his work on the "Diseases of the Heart and Aorta" appeared; it ran to over 900 pages, and one of its striking features was the wonderful bibliography which accompanied it. This work necessarily gave Gibson the position of an authority on heart disease, for it was evident that he at least knew all that was to be known at the time in this important and extensive department of medicine. In 1901 he edited a two-volume "Text-book of Medicine," to which many of the most prominent physicians in Britain contributed, and which is a very excellent work, although it has apparently never gained popularity with the student. In 1904 he delivered the Morison lectures at the Royal College of Physicians of Edinburgh on the "Nervous Affections of the Heart," which in due course appeared in book form. His contributions to medical literature are, however, far too numerous to mention in detail; they include chapters in "Systems of Medicine," lectures, addresses, and papers which appeared in one or other of the weekly or monthly journals, in the *Edinburgh Hospital Reports*, and in *International Clinics*. Four years ago his papers alone amounted to over 100 in number. His last work was the completion of the "Life of Sir William Tennant Gairdner" and the delivery of the Address in Medicine before the British Medical Association at its annual meeting in Liverpool last summer.

When Sir T. Grainger Stewart died Gibson was a candidate for the chair of Practice of Medicine in the University, and although he was not successful his reputation and popularity as a consultant rapidly grew and extended from that time. Even before that his reputation as a "heart specialist" had attained considerable proportions, his book on the heart and the Morison lectures necessarily marking him out as an able and erudite exponent of the diseases of the organ dealt with in the book and lectures. When he became known his personal attractiveness, his fine, open, manly, and sympathetic temperament readily gained him the confidence and affection of those he was called to see as a consultant, and made him very popular with those of his professional brethren who sought his assistance. It is in the full noon-tide of this professional usefulness that he has been cut down. That he enjoyed his success need not be questioned; that he almost gloried in expending physical and mental force even in his consulting work was equally evident, and it cannot be doubted that that generous expenditure of energy for other people, while it attracted them by its very vigour and graciousness, laid the beginnings of the myocardial condition which finally conquered him and took him from us.

As a lecturer and clinical teacher Gibson was successful and popular, and in this department, as in all others, there was an expenditure of nervous force that was attractive even if it were not always necessary. This forcefulness drew many men round him if it repelled some; the former class, and it was the larger, found him a kind, sympathetic, and helpful friend. His residents and clinical clerks were devoted to him in more than ordinary degree.

In general medical affairs Gibson took a prominent place in Edinburgh. In his earlier years he was secretary of the Royal College of Physicians, and was for many years a member of the Council of that corporation. He was chairman of the post-graduate board of study, and was an examiner both for his College and for the University. He was a member of the University Court of St. Andrews, and he had quite recently been appointed to represent his College on the General Medical Council. As a physician to the Royal Infirmary he took an active interest in all the varied questions which arose from time to time with regard to the relations of that institution to the medical school, and of the medical school and its teaching to it. His friendly and genial presence will be long missed at those business conferences. He was a great influence in virtue of his open sincerity, straightforwardness, and contempt for what was not straight. He had a withering contempt for meanness and the lower and baser forms of self-seeking and for whoever displayed them. He stood for all that was honourable and of good repute in the profession and in life. He was an optimist by disposition.

To a man like Gibson honours were bound to flow, and he was the recipient of an exceptional number. His reputation as a writer and a consultant entitled him to much, but his power of making friendships and of keeping them and his charming personality contributed some part in bringing them to him. And the list is a long one: he was an M.D. of Dublin, a D.Sc. of Harvard, a D.Sc. of Liverpool, an F.R.C.P. of Ireland, an LL.D. of McGill, and an LL.D. of St. Andrews. In the organisation of the Territorial Forces he held a commission as Lieutenant-Colonel to the 2nd Scottish General Hospital.

Apart from his personal qualities the outstanding professional side of Gibson's character was his intense devotion to the science and practice of his profession and the enthusiasm with which he followed all its advances. He was the exponent of whatever appeared to him to be sound in the latest advances in medical knowledge. He was actively sympathetic towards all forward movement in medicine, and his generous attitude towards other workers explained the personal affection men scattered all over the world felt for him. Few men were so widely known. The exact value of his own contributions to medicine it is too soon to attempt to estimate, meanwhile we state the special influence he exercised as a writer, a consultant, and a teacher of students. His loss to Edinburgh is very great; still greater is it to his friends, for no one can take his place. Had it not been for the breakdown in health Gibson would have occupied the Presidential chair of his College this winter, and it is one of the coincidences of life that he should die on the night of the college dinner.

OWEN THOMAS WILLIAMS, M.D. LOND., M.R.C.P. LOND.,

ASSISTANT PHYSICIAN TO THE LIVERPOOL ROYAL INFIRMARY.

WE much regret to record the death of Dr. Owen T. Williams, which occurred on Jan. 15th after a short but acute illness. Dr. Williams, who was only in his thirty-second year, was a brilliant member of the younger group of the medical profession in Liverpool. His career as a student at University College, Liverpool, was one of great distinction, and showed an unbroken record of successes. He obtained, in addition to the diplomas of the Conjoint Board, M.B. Lond. (with honours) (1903), M.D. Lond. (1904), and M.R.C.P. Lond. (1907). He was also a Bachelor of Science of London University. Prior to settling down to work in Liverpool he studied medicine in London, Berlin, Frankfort, and Baltimore. Upon his return to Liverpool he was appointed medical registrar and tutor at the Liverpool Royal Infirmary and honorary assistant physician at the Liverpool Consumption Hospital, which office he resigned in 1910 upon his appointment as assistant physician to the Liverpool Royal Infirmary. He was also lecturer in pharmacology at the University of Liverpool. He was an ardent student at the Johnston

Laboratory of the University, devoting much attention to the bio-chemistry of the processes of disease, especially in relation to problems of digestion and nutrition. He was joint editor with Professor Benjamin Moore of "Researches in Bio-chemistry." Although his career, so full of promise, was cut off at such an early age, he had already achieved a success remarkable in one so young. His contributions to medical literature were very numerous. He was an able teacher, held in high appreciation by the students at the University and at the Royal Infirmary, while his sympathetic character endeared him to all with whom he came in contact. His funeral, which took place on Jan. 18th, was attended by all his colleagues at the Infirmary, and by representatives from all the other hospitals in the city. There was also a large concourse of medical students and nurses from the various hospitals—an evidence of the high esteem in which he was held. He was unmarried.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Jean Morax, founder of the Association Médicale of French Switzerland and an active worker in the cause of hygiene, aged 74.—Dr. Franz Schultz, of Berlin, *privat-docent* of dermatology and radiography as applied to therapeutics.

THE NATIONAL INSURANCE ACT.

THE SPECIAL REPRESENTATIVE MEETING OF THE BRITISH MEDICAL ASSOCIATION.

A FURTHER special meeting of the Representative Body of the British Medical Association was held in the Connaught Rooms, London, on Friday and Saturday, Jan. 17th and 18th. The meeting was called to consider the desirability of releasing members of the medical profession from their pledge and undertakings in connexion with the National Insurance Act, and also to consider the situation created by the attitude of the Government toward the previous decisions of the Representative Body. As before, the proceedings were private, but official communications were sent out each day to the lay press. The following report is from a member of our staff, who was again permitted to be present.

The meeting began at 9.30 A.M. on Jan. 17th, under the chairmanship of Mr. T. JENNER VERRALL. The Representative Body did not go into committee but remained in full session throughout. After the disposal of formal business some time was spent in discussing the order in which the items on the agenda should be taken. It was then decided to express the opinion that where Representatives had received definite instructions from their Divisions, their speeches as well as their votes should be in support of those instructions. The first of the two main issues before the meeting was then raised by a motion proposed by Dr. C. BUTTAR:—

That while expressing the deepest sympathy with, and declining in any way to blame, those members of the profession who, compelled by economic pressure and the defection of their fellows, have against their wills gone on to the panels, the Representative Meeting expresses the opinion that, until agreements to treat insured persons under the Act are satisfactory to the medical profession and in accordance with the declared policy of the Association, the undertaking and pledge must be considered as still binding on those who have subscribed to them.

He claimed that their support and consideration were chiefly due to those men who, though faced with ruin, had remained loyal to their pledges. The motion was supported by other London representatives, who felt that the withdrawal of the pledge would counteract much of the success that had been gained in the metropolis through the vigorous campaign of the London Medical Committee. The opposition was led by Mr. J. E. O'SULLIVAN, who declared that the pledge was given in order to produce unity, and that as it had not done so they must quit a fool's paradise; it would not be fair to the loyal men to hold them now to their pledges. Dr. S. HODGSON also argued that since the pledge had failed as a weapon it should be abolished; in his opinion the Salford scheme, which had not involved breaking the pledge, could be made national. The motion was also opposed very emphatically by Mr. C. G. MEADE, and by Mr. J. L. STRETTON in a speech of considerable force. Their main line of argument was that men had been driven upon the panels wholesale, up and down the country; that this fact must be faced; and that the loyal minority must no longer be sacrificed. Other speakers brought forward the inadequacy of the defence funds and the changed attitude of the Association towards coöperation with lay bodies as reasons for granting absolution from the pledge.

Dr. G. E. HASLIP, who had given notice of a motion to proceed to the next business, pointed out the danger that lay upon each side of a straight vote upon Dr. Buttar's motion. He urged the meeting not to express a positive opinion upon the validity of the pledge and undertaking. The solicitor to the Association then gave it as his opinion that by its wording the pledge referred to the policy of the Association, whatever that might be, provided it was constitutionally adopted. This ruling was controverted by Dr. J. H. KEAY, who made it clear, however, that he spoke for himself and not on behalf of his Division. Dr. R. M. BEATON, in support of the original motion, declared that if London's example were followed the profession would win. He asked the meeting to give to a selected body of men plenary powers to meet changing conditions. Mr. E. B. TURNER, who was very cordially received, also strongly supported the motion. He said the fight in London was a test fight, and that if permission could be obtained for the insured of London to make their own arrangements, this would be obtained all over the country. Dr. T. A. HELME expressed deep sympathy both with those whose loyalty had kept them to the pledge in the face of ruin, and those who by treachery and force had been compelled to give unwilling service under the Act. But the latter were the majority, and the pledge as a fighting weapon had failed. The meeting would deliberately inflict ruin on the men with the strongest sense of honour if it held them to their word. The pledge must be absolved, and they must elect plenipotentiaries.

Dr. Buttar's motion was then shelved by a resolution to pass to the next business, and a motion standing in the name of the Canterbury and Faversham Division was taken:—

That this Representative Meeting, recognising the force of present circumstances and consulting the best interests of the Association and the unity of the profession, now releases all practitioners from their pledge and undertakings.

The mover, Dr. T. B. HEGGS, said that it was designed in order to keep within the fold the good men who had been intimidated into joining the panels. There should, he said, be no discrimination and no recrimination; all practitioners should be released. Thereupon various Representatives gave the history of their local struggles, and showed reason for a general formal release from the pledge. Dr. F. J. SMITH, however, pleaded for a *via media*, which would neither alienate the loyal nor give a triumph to the disloyal. He believed that such a course was offered by an amendment by Dr. Haslip.

After considerable discussion and some modification Dr. HASLIP'S amendment came before the meeting thus:—

That the Representative Body recognising the economic and other forms of pressure under which many members of the Association consider themselves warranted in taking a certain action with regard to the pledge and undertaking which they signed, and having regard to the strenuous fight which the profession in many areas has carried on, does not consider the present an opportune time to express an opinion upon the action of those members.

That this meeting accordingly proceeds to appoint a committee which may release from the pledge and undertaking the practitioners in any Divisions or Insurance Areas, which give to the Committee satisfactory evidence that this action is desired in such Divisions or Insurance Areas, such release only to be effective so far as regards service by practitioners in their own districts, parishes, and towns, and any acceptance of service by a practitioner in an area where release has not been given will be regarded as conduct detrimental to the honour and interests of the medical profession.

This compromise amendment was seconded by Dr. W. E. THOMAS and supported by Mr. D. F. TODD, who maintained that it backed up those Divisions which were still fighting, while making it possible to absolve from their pledges those Divisions which had had to give in. On being put to the meeting at the close of Friday's proceedings a roll-call vote was demanded and taken. The amendment was lost by 80 votes to 91. The main issue was thus still unsettled at the end of the first day's debate.

At the resumption on Saturday morning the CHAIRMAN addressed the meeting upon the various courses open to it. It was decided that a straight vote should be taken then and there upon Dr. Heggs's motion to release all practitioners from their pledges. A roll-call vote was demanded

and taken. The result was: For the motion, 115; against, 35; 5 members did not vote. Whereupon the Chairman declared the motion carried by the requisite two-thirds majority. Immediately afterwards the following resolution standing in the name of the Exeter Division was passed unanimously without discussion:—

Any acceptance of service outside the practitioner's own district, parish, or town, involving a change of residence for the express purpose of accepting service, will be regarded as conduct detrimental to the honour and interests of the medical profession.

Dr. HELME then addressed the meeting. Before rescinding the declaration against serving under the Act which was given by the Representative Body at Liverpool, he asked them to register a strong protest against the methods by which panels had been formed. He therefore submitted the following motion:—

That this meeting records its emphatic protest against the discreditable methods adopted by the Government, whereby a position of urgency was created, under which many practitioners, finding themselves threatened with financial ruin, were compelled to give unwilling service under the National Insurance Act on terms which this meeting considers to be derogatory to the profession and against the public interest.

This indictment was seconded by Mr. TURNER, who insisted that throughout its struggle for freedom the attitude of the medical profession had never been political; whereas, directly the Government saw that the medical opposition was serious, all the resources of the party machine were used to break it up. After debate this motion was put to the vote and carried with one dissentient. The Liverpool decision was then formally rescinded.

Consideration was next given to the future policy of the Association, and the following resolution, giving very full powers to the Council, was passed:—

That the Council be instructed: (*a*) to take all necessary steps to watch and protect the interests of the profession under the National Insurance Act; (*b*) to take any opportunity that may be afforded for placing the Representatives of the Association on the Advisory and Insurance Committees; (*c*) to obtain statutory recognition of Local Medical Committees in every insurance area; (*d*) to collect information as to defects in the Act and Regulations and to take all possible opportunities of remedying them.

It was further agreed, amidst applause, that in every area where the local profession is strongly organised in opposition to the Act, it should be encouraged to remain strong and should be supported to the fullest. The questions of central and local organisation, of finance, of the position of hospital staffs, and of support in the lay press were raised by Dr. E. R. FOTHERGILL and others, and after a short discussion these and kindred matters were referred to the Council, including the question of facilities for insured persons to contract out of the Act. Another important question which the Council was requested to consider was whether some way could be devised of obtaining more quickly than at present the decision of the Association in cases of urgency, and how far the regulations and by-laws of the Association would have to be altered in order to do so. It was felt that the present constitution of the Association had become unwieldy in action. The Council was also asked to consider the possibility of a postal vote of the whole profession upon questions of policy suggested by the Representative Body.

Before the meeting closed on Saturday afternoon Dr. J. A. MACDONALD (chairman of Council) drew attention to the importance of making the records in day-books as full as possible, since these would be the only evidence of work done under the Act, and therefore the only basis for a future demand for better terms. The vote of thanks to Mr. Verrall for his excellent chairmanship was again carried with acclamation. The proceedings terminated with a vote of thanks to the London Medical Committee.

LECTURES ON ILLUMINATING ENGINEERING.—A series of Friday evening lectures on Illuminating Engineering is now in progress at the Polytechnic, Regent-street, London, W. On Jan. 17th the first lecture of the second half of the course, dealing with illumination and the eye, was delivered by Dr. W. J. M. Ettles. The remaining five lectures, by Mr. J. S. Dow, commencing to-day (Jan. 24th), will deal with practical applications, including such questions as the measurement of light and illumination, colour, shades and reflectors, and indoor and outdoor illumination. These lectures should prove of interest to medical men at least as much as to the public.

Medical News.

UNIVERSITY OF LONDON.—The following is an addendum to the pass-list for the Third (M.B., B.S.) Examination for Medical Degrees held in October, 1912:—

Vincent Glendining, Guy's Hospital.

FOREIGN UNIVERSITY INTELLIGENCE.—*Breslau:* Dr. Ponfick, medical Privy Councillor and professor of pathological anatomy, will resign his chair at the close of the current winter session. He is 69 years of age.—*Cagliari:* Dr. Pasquale Sfameni, extraordinary professor of midwifery and gynæcology, has been promoted to the Ordinary Professorship.—*Copenhagen:* Dr. S. A. Gammeltoft has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Düsseldorf (Academy of Practical Medicine):* Dr. Ernst Graf, *docent*, Dr. Peter Janssen, chief of the surgical clinic, Dr. S. Engel, chief of the children's clinic, Dr. Reinhard von Velden, *docent* of Medicine and Pharmacology, have been granted the title of Professor.—*Erlangen:* Dr. W. Brock has been recognised as *privat-docent* of Otology.—*Giessen:* Dr. Th. Mollison has been recognised as *privat-docent* of Psychiatry.—*Halle:* The friction between the students and the Faculty has terminated, an arrangement being made that in future no foreigner will be allowed to "practise" in the medical clinic unless he has passed the "Physicum" examination in a German university or an equivalent elsewhere.—*Heidelberg:* Dr. Kurt Elze has been recognised as *privat-docent* of Anatomy.—*Michigan (Ann Arbor University):* Dr. Udo Wile has been appointed to the chair of Dermatology and Syphiligraphy, in succession to Dr. Breakey, resigned.—*Modena:* Dr. Giuseppe Ferrero has been recognised as *privat-docent* of Surgery and Operative Medicine.—*New York (Polyclinic Medical School and Hospital):* Dr. Anthony Bassler has been appointed to the chair of Medicine.—*Padua:* Dr. Amatore Austoni has been recognised as *privat-docent* of Operative Medicine.—*Palermo:* Dr. Emilio Engel has been recognised as *privat-docent* of Dermatology and Syphiligraphy.—*Prague (Bohemian University):* Dr. Viktor Guttmann has been recognised as *privat-docent* of Otology and Laryngology.—*Strasburg:* Professor Stilling has been appointed Medical Privy Councillor.—*Toulouse:* Dr. Garrigou, Lecturer on Hydrology, has been promoted to Adjunct Professor.—*Würzburg:* Fräulein Valentin Gros has been appointed Prosector in the University Anatomical Institute.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on Jan. 16th, Sir Francis H. Champneys being in the chair. A letter was considered from the matron of the Maternity Nursing Association, Myddelton-square, E.C., stating that the executive committee of the association is prepared to accommodate not more than eight outside pupils at the lectures held for candidates entering for the examination of the Central Midwives Board on certain conditions. A letter was also considered from the secretary of the Royal Maternity Charity of London suggesting that the Board might utilise the existing training school of the charity in connexion with the proposal that all lectures for pupils in London entering for the examination of the Central Midwives Board should be held at one of the training institutions. The Board directed that the secretary of the Royal Maternity Charity be thanked for his letter, and that it be considered when the list of lecturers is revised. A letter was considered from Dr. W. J. Howarth, county medical officer of Kent, asking the Board's opinion as to whether pulmonary tuberculosis should not now be regarded as an infectious disease and consequently within the prohibition contained in Rule E. 17 (b) as to laying out the dead. The Board directed that Dr. Howarth be informed that the answer to the question will be found in Rule E. 17 (b), which runs as follows:—

No midwife shall (except under the circumstances hereinafter mentioned) undertake the duty of laying out the dead. In no case must a midwife lay out the body of any patient on whom she has not been in attendance at the time of death, or a body upon which a post-mortem examination has been made. A midwife will not transgress this rule if (*a*) she prepares for burial the body of a lying-in woman, a still-born child, or an infant dying within ten days; or if (*b*) she lays out a dead body in a case of non-infectious illness, provided that she is not prohibited from doing so by any general rule of the local supervising

authority, and is not attending a midwifery case at the time. After laying out a dead body for burial she must notify the local supervising authority and undergo adequate cleansing and disinfection in accordance with Rule 5.

HUNTERIAN SOCIETY.—The anniversary dinner of this society will be held at De Keyser's Royal Hotel, London, on Shrove Tuesday, Feb. 4th, at 7.15 for 7.30 P.M.

Major R. J. Blackham, R.A.M.C., who was in charge of the entire street ambulance arrangements for the State entry into Delhi, and rendered assistance to Lord Hardinge after the outrage, has been placed on special duty with His Excellency the Viceroy of India.

LONDON SCHOOL OF TROPICAL MEDICINE.—Letters have been received at the school from Dr. R. T. Leiper confirming his telegram published in THE LANCET of Jan. 4th (p. 51) and stating that the species which carry Filaria loa are Chrysops dimidiata and Chrysops silacea.

THE ROYAL SANITARY INSTITUTE.—A sessional meeting of the institute will be held at 90, Buckingham Palace-road on Tuesday, Feb. 11th, when a discussion will take place on "Eighth Report of the Royal Commission on Sewage Disposal on Standard and Tests for Sewage and Sewage Effluents Discharging into Rivers and Streams," to be opened by Dr. Samuel Rideal. Among those who are expected to take part in the discussion are Professor A. Bostock Hill (Birmingham), Dr. George Reid (Stafford), and Dr. H. McLean Wilson (Wakefield). General discussion is invited. The chair will be taken at 7.30 P.M. by Colonel T. Walter Harding. Tickets for admission of visitors may be had on application to the secretary.

MEMORIAL TO MISS LOUISA TWINING.—The late Miss Twining, as is well known to many medical men, left a fine example of public spirit and good work accomplished under difficulties, and of efforts to make known the needs of the afflicted. The bettering of the conditions of the sick in Poor-law infirmaries and the personal care of needy epileptics were among the many charitable works which engaged her close attention. A desire has been expressed to perpetuate Miss Twining's name in a manner which she herself would have approved, and it is felt that the endowment of a memorial at any one of the Homes for Women at the Chalfont Colony, Bucks, would be an appropriate memorial, since she thoroughly approved of the methods pursued in these homes by the National Society for Epileptics, and subscribed liberally to them during her life-time. The joint treasurers of the memorial are Miss J. Wilson, 10, South Hill Park-gardens, Hampstead; and Lieutenant-Colonel Montefiore, Naval and Military Club, W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Patent Medicines Committee.

THE Select Committee of the House of Commons on Patent Medicines resumed the hearing of evidence on Thursday, Jan. 16th, Sir HENRY NORMAN in the chair.

Mr. E. B. WARING, a director of Boots Cash Chemists, Limited, Nottingham, and a member of the Pharmaceutical Society, gave evidence. He stated that an analysis of the sale of the preparations mentioned in "Secret Remedies" and "More Secret Remedies" had been made at the 534 shops in connexion with his company. Of the 269 different articles mentioned in those books, only 55 had a good sale, and 121 had no sale whatever. In his experience the proprietary articles which did not impress the public died out rapidly. In his opinion the prices of proprietary articles were not as a rule unreasonable, having regard to the trade. Proprietary articles were not only the product of manufacturers whose sole business was the making of a particular article, but dispensing chemists did a very large business in medicines made up ready for sale for the same purposes as proprietary remedies, but prepared from the British Pharmacopœia and from other standard formulæ. Such, for instance, were certain remedies made up for liver complaints, biliousness, colds, and influenza. A very large number of proprietary articles were made up and sold by chemists and were not advertised except locally in connexion with their business. They were sold to persons who had benefited from their use. There were many such proprietors in various parts of the country who would resent equally with the large manufacturers having to disclose their formulæ, except when they contained a certain scheduled poison. If it was thought that any real protection to the public would be gained, he saw no objection, when under certain circumstances the quantity was large, to putting the word "Poison" on medicines. But there was a certain danger in the publication of the name of particular poisons. To publish the fact that a medicine contained a named poison, such as morphia or other preparation of opium, would, he believed, induce those who had a craving for that drug to buy the article. Again, persons wishing to purchase a particular poison would be readily enabled to buy it by buying the mixture containing it, while it would be more difficult to buy the poison itself. The publication of the formula would increase the evil and not cure it. He protested on behalf of the retail trade against any publication of the formulæ with or without quantities. It would lead many persons to buy the ingredients separately and to try to compound the medicine itself, probably with disastrous results. It would lead to unfair competition with the manufacturers.

Sir PHILIP MAGNUS: The danger to which you refer is a trade danger, a commercial danger?

Mr. WARING: It is, of course, a trade danger, but my fear also is that people would buy the ingredients and try to mix them for themselves.

The CHAIRMAN: Your point is that if this publication of formulæ were insisted upon by law, it would rob people of rights which they had acquired by great trouble and expense.

Mr. WARING: That is my attitude. He went on to say that a large number of proprietary medicines were prescribed by medical men, and were used in their prescriptions. He submitted a list of 16 of these, all of which were advertised more or less and sold to the public under the Government stamp.

Dr. CHAPPLE: Are they all secret?

Mr. WARING: Not all the ingredients, but I think the quantities are. They must bear the patent medicine stamp.

The CHAIRMAN, examining the list of preparations submitted: A good many of these are not secret remedies of the class we have been dealing with in the greater part of our evidence.

Mr. GLYN JONES: Is it not a fact that all these articles come within the Medicine Stamp Acts, and *primâ facie* have to be stamped, but that the revenue authorities as a concession allow some of them to be sold in a prescription without a stamp, if ordered by a medical man?

Mr. WARING: Up to a certain point that is correct. But if a medical man orders any of these articles unmixed it must be stamped.

Dr. CHAPPLE: Do you suggest the ingredients of these are unknown to the medical men who prescribe them?

Mr. WARING: I cannot say. The formula is not published to the public. Large claims were made on behalf of many medicines which were used by the medical profession.

The CHAIRMAN: Your statement is that a number of those proprietary articles which are prescribed by medical men do undertake in their circulars to benefit and to cure a large number of complaints.

Mr. WARING: That is my point. He had considered the resolutions passed by the Section of Proprietary Articles of the London Chamber of Commerce, and he agreed with them.

The committee adjourned.

Medical Benefit in Germany.

The long promised report on medical benefit under the German Sickness Insurance Legislation has now been published as a Parliamentary white paper. It deals with the organisation of Sickness Insurance in Germany, the scope of medical benefit, methods of remuneration, the cost of medical benefit, the German pharmacy system, and the expenditure of sickness funds on medical benefit. The report is in the main based on inquiries made in a number of towns in various parts of Germany. These towns were chosen with a view to ascertain the experience of important sickness insurance organisations differing not only in character but in their methods of organising their medical service and of remunerating the practitioners engaged. In each town the information obtained from these sources was supplemented by the local medical associations and representative practitioners.

Deaths from Starvation and Privation.

On the motion of Mr. HERBERT LEWIS a return has been ordered by the House of Commons of deaths in England and Wales in the year 1912 upon which a coroner's jury has returned a verdict of death from starvation or death accelerated by privation; together with observations furnished to the Local Government Board by boards of guardians with reference to cases included in the return.

Ireland and Medical Benefits.

During the time that the National Insurance Act was in Committee of the House of Commons Ireland was specifically excluded from the scope of medical benefits. Recently the Chancellor of the Exchequer announced that he was considering the question of appointing a Departmental Committee to report whether medical benefit should be extended to Ireland, and if so, how far. It is now unofficially stated in the Lobby on good authority that the *personnel* of such a Committee has been practically settled. The chairman will be a gentleman of experience and eminence in Irish affairs. There will be representatives of the Irish Insurance Commission and the Irish Local Government Board. Three Members of Parliament will also sit on the Committee

They are stated to be Mr. J. DEVLIN and Mr. LARDNER (Nationalists) and Mr. HUGH T. BARRIE (Unionist). The extension of medical benefits to Ireland would require legislation.

The Medical Service in the Highlands and Islands.

The report of the Departmental Committee on the medical service in the Highlands and Islands of Scotland is receiving close attention from the Government. One of the points on which the members of the committee were not agreed was whether the department to be made responsible for the administration of the proposed new service should be the Scottish Insurance Commissioners or the Local Government Board for Scotland. A statement is made unofficially in the Lobby of the House of Commons that the latter will probably be charged with the control of the service.

Legislation on Midwives in Scotland.

Strong representations have been made to the Secretary for Scotland with a view to inducing the Government to bring in a measure next session for the regulation of the practice of midwives in Scotland. No official statement of his decision has been made public, but there are hopes that he may see fit to take action.

HOUSE OF COMMONS.

WEDNESDAY, JAN. 15TH.

Local Medical Committees.

In the course of a reply to a question put by Mr. FRED. HALL (Dulwich), Mr. MASTERMAN (Secretary to the Treasury) said: The formation of Local Medical Committees rests with the doctors themselves. Their statutory right under Section 62 of the National Insurance Act to be consulted by the Insurance Committees depends upon their applying to and satisfying the Commissioners that they are representative of the practitioners resident in the area for which the committee is formed, and also upon their receiving recognition by the Commissioners.

Mr. HALL: Is it not the case that this is one of the things which it is found impossible in practice to carry out?—Mr. MASTERMAN: No. It is a provision under the Act which is certain to be carried out.

Mr. HALL: It has not been carried out.

Medical Treatment of Insured Persons over 65.

Mr. CLYNES asked the Secretary to the Treasury whether the medical benefit scheme provided for members of Approved Societies over 65 years of age; and whether statements recently issued by the Commissioners deprived persons of medical benefit on attaining the age of 65.—Mr. MASTERMAN answered: Employed persons who were over the age of 65 on July 15th last are insured under the provisions of Section 49, under which their benefits are such as their society may determine and can provide out of their own and their employers' contributions and the State 2*d*. Societies have, in fact, preferred to use the funds available under the Act for giving sick pay, continuing any arrangements they have made in the past for medical benefit from the private funds of the society. Insured persons who enter insurance under the Act before the age of 65 are entitled to medical benefit till their death at whatever age, and I am not aware of any statement to the contrary issued by the Commissioners.

Medical Certificates under the Insurance Act.

Sir PHILIP MAGNUS asked the Secretary to the Treasury whether a certificate given by a doctor not on any panel would be accepted by the Insurance Committee as enabling an insured person to claim sickness benefit; and (2) whether, in cases where the Insurance Committees had permitted an insured person to make his own arrangements for medical benefit, under Section 15 (3) of the Act, the certificate of the doctor attending the insured person, although not on any panel, would be accepted in claiming sickness benefit.

Mr. WORTHINGTON EVANS asked the right honourable gentleman whether by regulation, advice, or otherwise the Commissioners would prevent Approved Societies from recognising and acting on certificates of illness given by doctors not on the panel for the purpose of claims for maternity, sickness, or invalidity benefits.—Mr. MASTERMAN (replying to the three questions) said: The sickness benefit of members of Approved Societies is administered by those societies and not by the Insurance Committees, and in deciding the nature of the evidence which they will demand the societies will take such steps as are necessary for the protection of their funds and the rights of their members. The evidence of sickness which a society will accept as sufficient for the purpose of giving sickness benefit depends upon the rules of the society and within those rules upon their discretion in the actual administration of the benefit.

Mr. R. GWYNNE: Is it not a fact that the Commissioners have issued hundreds of orders giving advice to all those societies on this subject?—Mr. MASTERMAN: Not that I am aware of.

Mr. GWYNNE: What is the practice in the case of an insured person who has been twice attended as a maternity case by a medical man who is not on the panel? Will the insured persons be entitled to benefit?—Mr. MASTERMAN: The administration of maternity benefit is entirely in the hands of the Approved Society, and that society having the evidence that the benefit has been rightly earned will no doubt pay it.

Sanatorium Treatment in Gloucestershire.

Mr. CHARLES BATHURST asked the Secretary to the Treasury whether he was aware that, on the basis of the Astor Report estimate of one tuberculous patient in every 5000 insured persons, provision would have to be made in the county of Gloucester for 66 sanatorium beds, 66 hospital beds, and 9 dispensaries; that the county Insurance Committee, out of the fund available to them under the National Insurance Act estimated at 8*d*. for each of 103,000 insured persons, would only have a sum of £3433 per annum, or sufficient to provide 18 sanatorium beds, no hospital accommodation, and 9 dispensaries; and whether he would say how they could make provision for the whole of their tuberculous cases without throwing a burden upon the county ratepayers which, even allowing for a moiety being forthcoming from the Exchequer, would amount to at least as much as their statutory grant for this purpose.—Mr. MASTERMAN said in reply: I do not understand how the honourable Member has arrived at his estimate for a need of 66 sanatorium beds and 66 hospital beds in the county of Gloucester for insured persons. Taking 103,000 as the number of insured persons, 21 sanatorium beds and 21 hospital beds would be required for them on the basis of the Astor report. Assuming the average cost of maintenance to be 21*s*. 6*d*. per bed per week, the annual cost would be £3003, leaving more than £400 for dispensary treatment in addition to the sum of about £429 3*s*. 4*d*. available in respect of the outstanding penny.

Mr. BATHURST: Does the right honourable gentleman realise that there is not nearly enough money available to provide the necessary accommodation?—Mr. MASTERMAN: If non-insured persons are included there is a special fund which can be created for their treatment towards which the Treasury offers half.

Independent Arrangements of Insured Persons.

Mr. TOUCHE asked the Secretary to the Treasury whether any and, if so, what reply had been given to those insured persons who had applied to be allowed to make their own arrangements for medical attendance and treatment as provided for in Section 15 (3) of the National Insurance Act

Mr. A. STRAUSS also asked the right honourable gentleman to state how many applications for permission to contract out of the National Insurance Act for medical treatment had been received by the London County Insurance Committee, and how many by all the Committees in Great Britain.—Mr. MASTERMAN wrote in reply: I propose to take these two questions together. The responsibility for deciding upon applications from insured persons to be allowed to make their own arrangements under Section 15 (3) of the National Insurance Act rests in the first instance with the several Insurance Committees to whom such applications are made. The committees will require to be satisfied as to the special circumstances of each particular case, and as to the acceptance by the doctor of the conditions required by the Regulations as to reports, certificates, and evidence of satisfactory service, and will also, in dealing with all the applications in their area, have regard to the general interests of the insured persons in that area. The number of applications received by the committees could not be obtained without a special return from all the committees, which would involve considerable labour at a time of great pressure and would possess no practical value.

The State of the London Panels.

Mr. TOUCHE asked the Secretary to the Treasury to state the total number of doctors on the London panels after eliminating repetitions of names of practitioners who appear on more than one list.—Mr. MASTERMAN furnished the following written answer: The total number of different doctors who have signed agreements to attend insured persons with the London Insurance Committee, and whose names have been issued on the borough lists, is 780. Some more names have been received since these lists were printed, and I understand that the number is now nearly 800

Vaccine Lymph in India.

Mr. KEIR HARDIE asked the Under Secretary of State for India whether it was the practice in India to slaughter the calves which had been used for the propagation of vaccine lymph, as was usually done in England and on the Continent; and if not, what steps were taken to ensure that the vaccine lymph was free from the extraneous germs of diseases other than that of vaccinia.—Mr. H. BAKER (on behalf of Mr. MONTAGU) wrote in reply: The answer to the first part of the honourable Member's question is in the negative. The steps taken to secure the purity of the lymph are previous quarantine of the calf and employment of strictly aseptic methods in the operations of vaccinating the animals and taking the lymph.

The Sanitary State of Nairobi.

Mr. CRAWSHAY WILLIAMS asked the Secretary of State for the Colonies whether his attention had been called to complaints regarding the sanitary state of Nairobi; and whether any action was contemplated to remedy conditions which appeared menacing to the health of the inhabitants.—Mr. L. HARCOURT replied: The question of the sanitation, not only of Nairobi but of the East Africa Protectorate generally, has been recently before me, and I am now considering, in consultation with the Governor and my expert advisers, the best method of improving the present state of affairs.

The Official Return on the Health of the Navy.

Mr. BURGOYNE asked the First Lord of the Admiralty, whether the official return on the health of the Navy might be accepted as a criterion of the established strength of the *personnel* at any average moment; and if so, wherein lay the difference between the figures there given and the estimated total for which money was taken in the year in question.—Mr. CHURCHILL replied: The answer to the first part of the question is in the negative, and I readily admit that the return is somewhat misleading except for the purposes of the Naval Medical Service. The figure given under the heading "Average Force" on p. 98 of the return—namely, 117,100—represents the average number of men liable to treatment on board or at the naval establishments throughout the year. Cadets, Coastguard, and Royal Marines at headquarters are excluded, the latter being shown separately on pages 141, 147, and 166 of the return. The actual number borne on Dec. 15th, 1911, was 133,498 officers and men.

THURSDAY, JAN. 16TH.

Medical Practices and the National Insurance Act.

Sir J. D. REES asked the Secretary to the Treasury whether he was aware that a practice in Middlesex worth £1500 before the passing of the National Insurance Act was now unsaleable; whether he was aware that doctors who, for reasons of health or otherwise, were only able to perform consulting work in their own houses and were unable to join the panels would be ruined, since as many as 80 per cent. of their patients would become insured persons; and whether he would inquire into these effects of the National Insurance Act.—Mr. MASTERMAN answered: I would refer the honourable Member to the answer which I gave him to a similar question on Jan. 1st, to which I have nothing to add.

Sir J. D. REES: Does the right honourable gentleman notice that this is another case, and as he doubts the generality of my statement, will he take into account the fact that there are many such cases, and make an inquiry?—Mr. MASTERMAN: It is far too early to make an inquiry.

All I can say is that, as a result of the working of the National Insurance Act, the practices of many doctors will probably be doubled in value.

Sir J. D. REES: Does the right honourable gentleman think that the medical profession are no judges of their own business?—Mr. MASTERMAN: The members of the medical profession are coming in to work the Act in large numbers.

The Insurance Act in Argyllshire.

Major HOPE asked the Secretary to the Treasury whether his attention had been called to the meeting of the Argyllshire Insurance Committee on Jan. 10th, when it was resolved that the circumstances of the county were such that the panel system, worked at its best, would not give a complete and satisfactory medical service, and that it should be represented to the Insurance Commissioners that a large Treasury grant was necessary for Argyllshire in order that insured persons might receive proper medical treatment; and whether the probable necessity of such grants being made was included in the £1,650,000 estimated by the Chancellor of the Exchequer on Oct. 23rd, 1912, as the additional cost of medical benefit under the National Insurance Act.—Mr. MASTERMAN said in reply: Argyllshire is one of the districts within the terms of reference of the Highlands and Islands Committee, whose report is now under consideration.

Major HOPE: After the report has been dealt with and acted upon, will the insured person be provided with medical benefit or the contribution returned?—Mr. MASTERMAN: I think there is medical benefit for all the insured persons in Argyllshire.

Sir G. YOUNGER: Will the right honourable gentleman say how it is possible in these scattered areas, with matters as they are now, to do that unless he has more medical men?—Mr. MASTERMAN: All the medical men in Argyllshire have taken service under the National Insurance Act and they have been promised a special mileage grant in those scattered areas.

The Marquis of TULLIBARDINE: With regard to the question of mileage, has that been promised to the country doctors?—Mr. MASTERMAN: Yes, all the doctors have been promised that in sparsely populated areas there will be a special grant.

Assistants under the Insurance Act.

Mr. WORTHINGTON EVANS asked the Secretary to the Treasury whether, where a panel had been constituted, it was necessary for panel doctors' assistants to be also on the panel before they were permitted to treat insured persons; and whether the locum tenens of a panel doctor must be on the panel before he could look after the panel doctors' patients.—Mr. MASTERMAN answered: Where a panel is constituted it is open to a qualified assistant or locum tenens, if his principal assents, to place his name on the panel. An assistant or locum tenens whose name is not thus on the panel may only treat insured persons on behalf of his principal when the latter is precluded by urgency or other professional duties, absence from home, or other reasonable cause from giving personal attendance to an insured person under his care.

Mr. WORTHINGTON EVANS: Would the ordinary two or three weeks' holiday be considered a reasonable cause?—Mr. MASTERMAN: Yes, it would include a case of that sort.

In reply to Mr. JOHN WARD, Mr. MASTERMAN stated that it was the duty of the Insurance Committee to take any necessary steps to secure that the service provided by any assistants was satisfactory, but, subject to this, the salary of such assistants was a matter for their principals and themselves to determine.

Nursing Arrangements under the Insurance Act.

Sir ARCHIBALD WILLIAMSON asked the Secretary to the Treasury whether any arrangements had yet been made to provide nursing for insured persons; whether such arrangements, if any, had been made with existing district nursing associations; whether these associations were willing to undertake the work; and how much it was proposed to pay per insured person for the nursing required.—Mr. MASTERMAN wrote in reply: The provision of nurses is a matter for the Insurance Committees and Approved Societies. The Commissioners have not yet received information from any committee or society as to the employment of nurses under medical benefit, but I believe some provision of the kind has been made in some cases in connexion with sanatorium benefit.

Sanatorium Treatment in Ireland.

Mr. HUGH BARRIE asked the Secretary to the Treasury whether he would now state the amount of the intended grant in aid to be given to Irish county councils to assist in providing sanatoria treatment for uninsured persons, and to meet the cost of providing sanatoria treatment for insured persons, in so far as insurance contributions would be insufficient for the purpose.—Mr. MASTERMAN furnished the following written answer: The intention is that the amount of the annual grant should be one half of the total net cost incurred, within reasonable limits, by or on behalf of a county or county borough council, or combinations of these bodies, according to a scheme approved by the Irish Local Government Board, in treatment of tuberculosis in the area, of all persons, whether insured persons, dependents of insured persons, or persons who are neither insured persons nor the dependents of insured persons, after deducting the amounts received from Insurance Committees out of the moneys available under the National Insurance Act for sanatorium benefits and any sums received in respect of the treatment of non-insured persons or otherwise. A circular explaining the conditions of the grant in detail is now in draft and will shortly be issued by the Irish Local Government Board.

Inclusive Fees at English Universities.

In reply to Mr. WHYTE, Mr. J. A. PEASE (President of the Board of Education) said: The Universities in England and Wales in receipt of Exchequer grants charge inclusive fees in the great majority of cases, universally so in the Faculty of Medicine.

MONDAY, JAN. 20TH.

Friendly Societies and Canvassing.

Dr. ESMONDE asked the Secretary to the Treasury whether he was aware that some benefit societies had issued circulars to their members urging them to select particular doctors on the panel, and had also sent canvassers to their members to inform them that they were required by the society to select certain doctors who were named; whether in the majority of cases this was being done with reference to members of those societies who only became members of any Friendly Society for the first time under the provisions of the National Insurance Act, and who were not patients of the particular doctors named; and whether, in view of the effect of pressure such as this or canvassing carried on with the connivance of the doctors who were favoured by the officials of these societies upon the other doctors who had gone on the local panels, and whose patients were thus interfered with, the Insurance Commissioners would have immediate steps taken to prohibit societies from interfering in this manner.—Mr. MASTERMAN answered: Every insured person has a right to select the practitioner on the panel by whom he wishes to be attended, and the issue of any circular which conceals this fact would be unjustifiable. If my honourable friend will inform me of any actual case in which a circular has been issued stating that members are required by the society to select certain doctors who are named, I will see whether any action should be taken.

London County Medical Committee.

Mr. TOUCHE asked the Secretary to the Treasury whether his attention had been called to a resolution passed by the London Medical Committee protesting against the recent formation of what was termed the London County Medical Committee (from among the members of which an executive committee had been formed), on the ground that in no sense consistent with reason, or in pursuance of Section 62 of the National Insurance Act, could the Insurance Commissioners be satisfied that such a committee could be regarded as representative of the 5500 duly qualified medical practitioners resident in the county of London; and could he say what steps were proposed to be taken by the Commissioners to secure that any body which was recognised under the Act satisfied the provisions of the Act.—Mr. MASTERMAN replied: The committee referred to in the question has not yet been recognised by the Commissioners under Section 62 of the Act. The Commissioners, when considering applications made to them by a medical committee for recognition under that section, require full information as to its composition and the procedure by which it was brought into existence.

The London Panel.

Mr. TOUCHE asked the Secretary to the Treasury how many of the doctors on the panel for the county of London were also on the panels of neighbouring counties.—Mr. MASTERMAN said in reply: I believe that some doctors resident near the border of the administrative county of London have arranged to continue to treat insured persons on the other side of that border under the Insurance Act as formerly in private practice. A complete answer to this question would involve the separate examination and comparison of the panels of Middlesex, Surrey, Kent, Essex, West Ham, and Croydon. I will send the honourable Member, if he desires, the printed lists of doctors for all these areas.

Major WHITE also asked whether any doctors were entered on more than one panel in the county of London, and, if so, how many; and how many of these had been registered in more than two districts.—Mr. MASTERMAN answered: There is only one panel for the county of London. Its division into lists for the separate boroughs is for the assistance of the insured persons in their selection of a doctor within convenient distance of their homes. Medical men were asked in what districts they wished to serve, and the lists were prepared accordingly. The number of doctors on the London panel in the first list was 780, and I learn that more than a hundred new names have since been received.

Contiguous Panels.

Major WHITE asked the Secretary to the Treasury whether any medical men were entered on more than one panel under the National Insurance Act; if so, how many; and how many of these had been registered in more than two districts.—Mr. MASTERMAN replied: Yes. Where a medical man living near the boundary between two contiguous areas has patients in both he has, of course, placed his name on the panel of both. It would obviously have been detrimental to the interests, not only of the medical men but of insured persons, that any such artificial divisions as arise from local government boundaries should preclude insured persons from continuing to receive the services of their own doctors. The figure of 15,000 given as the number of doctors on panels in Great Britain was arrived at after making a liberal discount for cases of this kind.

The Panel Lists.

Mr. HOGGE asked the Secretary to the Treasury to state what steps had been taken to acquaint insured persons with the names and addresses of doctors on the panel; and whether lists of their names and addresses had been circulated to each insured person, or, failing that, whether their names and addresses had been advertised in the local press.—Mr. MASTERMAN said in reply: Lists of medical men on the panel have been set up in all post offices, and in offices of the Customs and Excise Officers, at Police Stations, Labour Exchanges, and hospitals, and have also been sent to the local branches of Approved Societies who asked for them. Lists have not been supplied to individual insured persons, but certain newspapers have, I believe, published local lists.

Mr. NEWMAN asked whether, before admitting the name of any practitioner who might apply to have his name placed on a panel in their area, the Insurance Committees had been directed by the Insurance Commissioners to investigate the validity and worth of any foreign or American degree that such applicant might adduce as proof of ability to fulfil the duties required of him.—Mr. MASTERMAN answered: I am not aware that any medical practitioners have been included on any panel except duly qualified medical practitioners—that is, practitioners for the time being registered under the Medical Acts. No foreign or colonial practitioner is entitled to be registered unless he possesses the qualifications prescribed by the Medical Act, 1886.

Mr. NEWMAN asked the right honourable gentleman whether his attention had been drawn to the difficulty caused to insured persons who were obliged to select a medical practitioner from their local panel owing to his status and degree being stated by means of letters of the alphabet only; whether on the Kensington panel two practitioners were described as L.K.Q.C.P.I. and L.R.F.P.S.G. respectively; and whether, in a revised or any subsequent copy of the panel that might be issued, the Insurance Commissioners would give directions that any qualifications in possession of the practitioner should be set out in more popular language.—Mr. MASTERMAN said in reply: The question of the manner in which lists of doctors on the different panels are published is entirely a matter for the Insurance Committees themselves acting in conjunction with the medical men on the panel. I believe there have been

local variations in the procedure adopted, but I do not believe that these have caused any difficulties to insured persons making their choice.

The Completion of Panels.

Mr. BOWERMAN asked the Chancellor of the Exchequer whether, in view of the decision arrived at on Saturday last at a Representative Meeting of the British Medical Association, it was intended to allow further time for the completion of the doctors' panels, and whether it was intended to set up the Local Medical Committees.—Mr. LLOYD GEORGE said in reply: So far as I am aware the panels are still open in the greater part of the kingdom, and medical men may still send in their names. The date of publication of the names rests with the Local Insurance Committees. Applications for recognition by the Local Medical Committee may be sent at any time to the Insurance Commissioners for approval.

TUESDAY, JAN. 21ST.

The London Panel.

Replying to Sir J. D. REES, Mr. MASTERMAN said: The number of doctors on the London panel is now 930.

Mr. MASTERMAN, in a written reply to a question put by Mr. TOUCHE, stated that he was informed by the London Insurance Committee that 22 of the doctors whose names appeared on the London panel resided outside the boundaries of the administrative county of London.

Mr. TOUCHE asked the right honourable gentleman how many doctors on the London panel in respect of the borough of Islington had resigned.—Mr. MASTERMAN wrote in reply: I find on inquiry from the London Insurance Committee that no doctor on the London panel whose name appears on the list for the borough of Islington has withdrawn.

Mr. TOUCHE asked whether the right honourable gentleman was aware that there were approximately 200 medical practitioners resident in the borough of Islington, and could he say how many of the 73 doctors on the London panel for the borough were resident within the borough.—Mr. MASTERMAN wrote in reply: I am informed by the London Insurance Committee that of the 76 doctors on the London panel who are prepared to attend insured persons in Islington 29 are actually resident in that borough, but some of the remainder have surgeries within the boundaries of the borough.

Mr. TOUCHE also asked how many of the doctors whose names appeared on the London panel had resigned.—Mr. MASTERMAN (in a written answer) replied: Four doctors on the London panel have withdrawn, one of them because he is leaving London.

Medical Services and Snowstorms.

The Marquis of TULLIBARDINE asked the Secretary to the Treasury if an insured person wired for a doctor and was unable to get medical assistance owing to the roads being blocked with snow, the amount of premium due for medical benefit for that period would be refunded.—Mr. MASTERMAN replied: The answer is in the negative.

Accidents to Medical Men on the Panels.

The Marquis of TULLIBARDINE asked the Secretary to the Treasury whether a doctor meeting with an accident or injury while attending to or going to or from attending a case under the National Insurance Act received compensation for such injury.—Mr. MASTERMAN said in reply: The answer is in the negative. I am advised that a medical man on the panel is not in the position of an employee of an Insurance Committee and has no more title to compensation from that committee in case of accident than a doctor attending a private patient has from that patient.

Medical Service in the Highlands and Islands.

Mr. CATHCART WASON asked the Secretary to the Treasury whether, in view of the fact that no action had yet been taken in connexion with the report on the medical service in the Highlands and islands, exceptional arrangements would be made to secure fair remuneration in the meantime to medical men in this part of the country.—Mr. MASTERMAN replied: I think that all the medical men in the Highlands, or the great majority of them, are on the panel and are attending sick persons. The report goes further than the attendance on sick persons, and I think we must have a few days to consider it.

WEDNESDAY, JAN. 22ND.

Conditions of Panel Service.

In reply to Mr. RUPERT GWYNNE, Mr. MASTERMAN said: No medical man ought to accept more insured persons on his list under the National Insurance Act than he considers he can properly be responsible for, and any insured person who has reason to believe that he is receiving inadequate attention from a doctor under the Act can bring his case before the Medical Service Sub-committee set up by the Regulations.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury whether list doctors were entitled to prescribe and limit the hours during which they would attend insured persons; was he aware that in some cases doctors had intimated that their services were only available for insured persons between the hours of 9 and 10 A.M. and 5 and 6 P.M.; and would he state what was the position of persons who could not attend during such restricted hours.—Mr. MASTERMAN answered: The honourable Member is under a misapprehension. Each doctor on the panel is required to see patients at his own residence or surgery or other appointed place at stated hours, such hours being agreed upon between the doctor and the Insurance Committee. Any patient whose condition so requires must be visited by the doctor at the patient's own home.

BOOKS, ETC., RECEIVED.

A. MARCUS AND E. WEBER'S VERLAG, Bonn.

Arzt und R.V.O. Der Arzt und die deutsche Reichsversicherungsordnung. Von Dr. Th. Rumpf, Geh. Med.-Rat und Professor an der Universität Bonn. Price, paper, M.3.; bound, M.4.

APPLETON, D., AND COMPANY, New York and London.

A Treatise on Pellagra. For the General Practitioner. By Edward Jenner Wood, S.B., M.D., Chairman of the Pellagra Commission, North Carolina Board of Health. Price 16*s.* net.

Tuberculin in Diagnosis and Treatment. By Louis Hamman, Associate in Medicine in the Johns Hopkins University and to the Johns Hopkins Hospital; and Samuel Wolman, Instructor in Medicine in the Johns Hopkins University. Price 12*s.* 6*d.* net.

A Student's Manual of Surgical Diagnosis. By George Emerson Brewer, M.D., Professor of Clinical Surgery, College of Physicians and Surgeons, Columbia University. Price not stated.

The Mosquito: its Relation to Disease and its Extermination. By Alvah H. Doty, formerly Health Officer of the Port of New York. Price not stated.

BAILLIÈRE, TINDALL, AND COX, London.

Physical Diagnosis. By Richard C. Cabot, M.D., Assistant Professor of Medicine in Harvard University. Fifth edition, Revised and enlarged. Price 15*s.* net.

BALE (JOHN), SONS, AND DANIELSSON, LIMITED, London.

On Conjugal Happiness. Experiences, Reflections, and Advice of a Medical Man. By Hofrat Dr. L. Loewenfeld, Munich. Translated from the Third Edition by Ronald E. S. Krohn, M.D. Lond., M.R.C.S.E., L.R.C.P. Price 7*s.* 6*d.* net.

CHURCHILL, J. AND A., London.

Law for Medical Men. A Book for Practitioners containing Extracts from Acts of Parliament interesting to Medical Men. By Fred. J. Smith, M.D., F.R.C.P., Physician to the London Hospital. Price 10*s.* 6*d.* net.

CONSTABLE AND CO., LIMITED, London. HOUGHTON MIFFLIN COMPANY, Boston and New York.

The Milk Question. By M. J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard Medical School. Price 7*s.* 6*d.* net.

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Einführung in die Biochemie für Naturhistoriker und Mediziner. Von Dr. Viktor Grafe, Privatdozent an der Wiener Universität. Price not stated.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

The Treatment of Disease in Children. By G. A. Sutherland, M.D., F.R.C.P., Physician to Paddington Green Children's Hospital, and to the Hampstead and North-West London Hospital. Price 10*s.* 6*d.* net.

G. BRAUNSCHE HOFBUCHDRUCKEREI UND VERLAG, Karlsruhe i.B.

Volkswirtschaftliche Abhandlungen der badischen Hochschulen. Neue Folge. Heft 14. Der Gewerkschaftskampf der deutschen Aerzte. Von Dr. Theodor Plaut. Price M.3.

GRIFFIN, CHARLES, AND COMPANY, LIMITED, London.

A Medical and Surgical Help. For Shipmasters and Officers in the Merchant Navy. By Wm. Johnson Smith, F.R.C.S., late Principal Medical Officer, Seamen's Hospital, Greenwich. Revised by Arnold Chaplin, M.D., F.R.C.P. Fourth edition, revised. Price 5*s.* net.

HODDER AND STOUGHTON AND HENRY FROWDE, London. FOR THE UNIVERSITY OF LONDON PRESS.

London Medical Publications. Minor Surgery. By Leonard A. Bidwell, F.R.C.S. Second edition. Revised and enlarged. Price 10*s.* 6*d.* net.

The Diseases of the Skin. By Willmott Evans, M.D., B.S., B.Sc., F.R.C.S., Senior Surgeon to the Royal Free Hospital. Price 10*s.* 6*d.* net.

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Trial of Mrs. Maybrick. Edited by H. B. Irving, M.A. Oxon. Price 5*s.* net.

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Human Physiology. By Professor Luigi Luciani, Director of the Physiological Institute of the Royal University of Rome. Translated by Frances A. Welby. Edited by Dr. M. Camis, Institute of Physiology, University of Pisa. With a Preface by J. N. Langley, F.R.S., Professor of Physiology in the University of Cambridge. In Four Volumes. Vol. II.: Internal Secretion; Digestion; Excretion; the Skin. Price 18*s.* net.

MEDICAL REVIEW OF REVIEWS, 206, Broadway, New York.

Pathfinders in Medicine. By Victor Robinson. With a Letter from Ernst Haeckel and an Introduction by Abraham Jacobi. Price $2.50, post paid.

NISBET, JAMES, AND CO., LIMITED, 22, Berners-street, London, W.

Nisbet's Medical Directory, 1913. Price 8*s.* 6*d.* net.

PAUL, STANLEY, AND CO., 31, Essex-street, Strand, London, W.C.

The Insanity of Genius and the General Inequality of Human Faculty Physiologically Considered. By J. F. Nisbet. Sixth edition. With a Preface by Bernard Hollander, M.D. Price 5*s.* net.

PHARMACEUTICAL JOURNAL OFFICE, 72, Great Russell-street, London, W.C.

The Pharmacist's Diary and Year-book for 1913. Including Additions to The Pharmaceutical Journal Formulary, together with other Information. Edited by John Humphrey. Price 5*s.* net.

RICHARDS, GRANT, LIMITED, London. LIPPINCOTT, J. B., Company, Philadelphia.

Monaco and Monte Carlo. By Adolphe Smith. With Eight Reproductions in Colour from Drawings by Charles Maresco Pearce, and with Forty-eight Illustrations in Black and White. Price 15*s.* net.

SPRINGER, JULIUS, Berlin.

Jarhbuch für orthopädische Chirurgie. Bearbeitet von Dr. Paul Glaessner. Dritter Band: 1911. Price, paper, M.6; bound, M. 6.80.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL, London.

University College Hospital Medical School. (University of London.) Research Department. Director: Dr. Charles Bolton. Collected Papers. Vol. II. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

CLARK, R. V., M.B., Ch.B. Edin., D.P.H., has been appointed Medical Officer of Health of the Borough of Croydon.

CLEGG, JOHN GRAY, M.D., B.S. Lond., F.R.C.S. Eng., has been appointed Honorary Ophthalmic Surgeon to the Children's Hospital, Manchester.

CRUMP, J. A., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Welshpool District of the county of Montgomery.

FREEMAN, W. T., M.D. Durh., F.R.C.S. Eng., L.R.C.P. Lond., has been appointed Physician to the Royal Berkshire Hospital, Reading.

GOULDEN, HERBERT EDWARD, M.D. Durh., L.R.C.P. Lond., M.R.C.S., D.P.H. Cantab., has been appointed Medical Officer for the Tuberculosis Dispensary at Exeter.

MILTON, JOHN PENN, L.R.C.P. Lond., M.R.C.S., has been appointed Superintendent of the new County Sanatorium which is being erected at Hawkmoor, Bovey Tracey, Devon.

NOALL, W. PAYNTER, M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Consulting Surgeon to the Brooke Dispensary and Cottage Hospital, Selby.

ORTON, DOUGLAS CATTERALL LEYLAND, L.R.C.P. Lond., M.R.C.S., L.D.S. R.C.S. Eng., has been appointed Honorary Anæsthetist and Dental Surgeon to the Eye and Ear Infirmary, Liverpool.

PEXMAN, J. FORREST, M.B., Ch.B. Edin., has been appointed House Surgeon at the Birmingham and Midland Eye Hospital.

ROBINSON, HARGREAVES, L.A.H. Dub., has been appointed Clinical Assistant at the Hospital for Women, Soho-square.

SAYRES, A. W. FORTESCUE, M.D. Brux., M.R.C.S., L.R.C.P. Lond., D.P.H., has been appointed Tuberculosis Officer to the Stonehouse District of the Devon County Council.

SCHOLEFIELD, E. H., M.B., B.Ch. Oxon., D.P.H. Manch., has been appointed Medical Officer to the Tuberculosis Dispensary at Barnstaple.

STEVENSON, EDGAR, M.D., C.M. Aberd., has been appointed Medical Referee under the Workmen's Compensation Act, 1906, for County Court Circuit No. 28, for Ophthalmic cases.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BATH, ROYAL UNITED HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

BERKSHIRE COUNTY COUNCIL.—Tuberculosis Officer. Salary £500 per annum.

BRADFORD POOR-LAW UNION HOSPITAL AND WORKHOUSE.—Assistant Resident Medical Officer, unmarried. Salary £130 per annum, with rations, apartments, and laundry.

BRADFORD ROYAL INFIRMARY.—Resident Surgical Officer, unmarried. Salary £150 per annum, with board and residence.

BRISTOL ROYAL INFIRMARY.—Resident Casualty Officer. Salary at rate of £50 per annum, with board, apartments, and laundry. Also Dental House Surgeon. Salary £100 per annum, with board, apartments, and laundry. Also House Physician. Salary £100 per annum, with board, apartments, and laundry. Also Obstetric and Ophthalmic House Surgeon. Salary £75 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Resident Medical Officer. Salary £100 per annum, with residence, board, and washing.

CAMBRIDGE, COUNTY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, washing, and attendance.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

CENTRAL LONDON OPHTHALMIC HOSPITAL, Gray's Inn-road, W.C.—Two Assistant Surgeons.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—House Surgeon, unmarried. Salary £80 per annum.

CITY OF LONDON LYING-IN HOSPITAL, City-road, E.C.—Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, lodging, and washing.

DAVOS PLATZ, SWITZERLAND, QUEEN ALEXANDRA SANATORIUM.—Medical Superintendent. Salary £200 per annum, with private flat, board, and washing.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

FRENCH HOSPITAL, 172, Shaftesbury-avenue, W.C.—Third Physician.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £75 per annum, with board, residence, and laundry.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—House Physician and House Surgeon, unmarried, for six months. Salary £30 each, with board, residence, and washing allowance. Also Casualty Medical Officer. Salary £200 per annum, with luncheon.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

LAMBETH, METROPOLITAN BOROUGH OF.—Assistant Tuberculosis Officer. Salary £300 per annum.

LEEDS, WEST RIDING ASYLUM, Menston.—Fourth Assistant Medical Officer. Salary £150 per annum, with board and apartments.

LEICESTERSHIRE COUNTY COUNCIL.—Tuberculosis Medical Officer. Salary at rate of £500 per annum.

LIVERPOOL, CITY INFECTIOUS DISEASES HOSPITAL.—Assistant Resident Medical Officer, unmarried. Salary £120 per annum, with board, washing, and lodging.

LIVERPOOL DISPENSARIES.—Head Surgeon, unmarried. Salary £170 per annum, with board and apartments.

LONDON HOSPITAL, Whitechapel, E.—Assistant Surgeon.

MACCLESFIELD GENERAL INFIRMARY.—Junior House Surgeon. Salary £80 per annum, with board and residence.

MANCHESTER, ANCOATS HOSPITAL.—Honorary Pathologist.

MARGATE, ROYAL SEA BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £100 per annum, with board, residence, and laundry.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Surgeon. Salary at rate of £60 per annum, with board and washing. Also Assistant House Surgeon. Salary at rate of £40 per annum, with board and washing. Each for six months.

NAVY MEDICAL DEPARTMENT.—Six Dental Surgeons for duty with Naval Forces in the United Kingdom. Salary £1 per diem.

NEWCASTLE-UPON-TYNE, CITY AND COUNTY TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £500 per annum.

NOTTINGHAM CITY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and laundry.

OXFORD COUNTY ASYLUM, Littlemore, near Oxford.—Junior Assistant Medical Officer. Salary £150 per annum, with apartments, board, and washing.

READING, ROYAL BERKSHIRE HOSPITAL.—Honorary Assistant Physician.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, residence, and washing.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Curator and Librarian. Salary at rate of £120 per annum, with lunch.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—Second Resident House Surgeon, unmarried, for six months. Salary at rate of £100 per annum.

ROYAL NAVAL MEDICAL SERVICE.—Twenty-five appointments.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.

ST. MARY'S HOSPITAL, London, W.—Resident Assistant Anæsthetist for six months. Salary at rate of £100 per annum, with board and residence.

SALFORD ROYAL HOSPITAL.—Honorary Physician and Honorary Assistant Physician.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Surgeon to Out-patients. Also Assistant Medical Registrar for six months.

SHEFFIELD, SOUTH YORKSHIRE ASYLUM, Wadsley.—Fourth Assistant Medical Officer. Salary £150 per annum, with board, &c.

STAFFORD, COTON HILL LUNATIC HOSPITAL.—Assistant Medical Officer, unmarried. Salary £160 per annum, with residence, board, and laundry.

STAFFORD, STAFFORDSHIRE COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £210 per annum, with apartments, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Physician. Salary £100 per annum, with apartments, board, and washing.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Physician.

WESTERN OPHTHALMIC HOSPITAL, Marylebone-road, N.W.—Second House Surgeon for six months. Salary £40 per annum.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Assistant Honorary Surgeon in the Eye, Ear, and Throat Departments.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Pathologist and Bacteriologist. Salary £200 per annum.

WORCESTER GENERAL INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

YORK DISPENSARY.—Resident Medical Officer, unmarried. Salary £140 per annum, with board, lodging, and attendance.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Acts at Buckie, in the county of Banff; and at Moreton-in-Marsh, in the county of Gloucester.

Births, Marriages, and Deaths.

BIRTHS.

NEWBY.—On Jan. 13th, at Addiscombe-road, Croydon, the wife of Gervase E. Newby, F.R.C.S., of a daughter.

PLOWRIGHT.—On Jan. 16th, at King's Lynn, the wife of Charles T. McL. Plowright, M.B., B.C., of a daughter.

MARRIAGES.

CAWSTON—WATERS.—On Jan. 18th, at St. John's, East London, Frederick Gordon Cawston, M.B., B.C. Cantab., M.R.C.S., L.R.C.P., to Agnes Constance, youngest daughter of Canon Waters, of All Saints', Tombuland, South Africa.

GASTER—NATHAN.—On Jan. 15th, at the residence of the bride's mother, Maisemore Mansions, Canfield-gardens, Anghel Gaster, M.D., M.R.C.P. Lond., to Mrs. Alice Nathan, widow of the late Henry Nathan.

DEATHS.

BANTOCK.—On Jan. 15th, at Elgin Mansions, Maida Vale, George Granville Bantock, M.D., in his 76th year.

BAYLEY.—On Jan. 19th, at Bryn-y-Neuadd, Llanfairfechan, Joseph Bayley, Medical Superintendent of St. Andrew's Hospital for Mental Diseases, Northampton, aged 77 years.

MATTHEWS.—On Jan. 18th, at Dovercourt, Essex, Samuel Richard Matthews, M.D., M.R.C.S.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

AN UNPROMISING OPENING.

AN attempt is being made by a club official to import a medical man into Eastleigh and Bishopstoke, in the neighbourhood of Southampton, to act as medical officer to the uninsured members, male, female, and children under 16, of the local Friendly Societies, in opposition to the practitioners of the district, who have refused to accept from the club the sum offered of 3s. 6d. for juvenile and 4s. for adult members. Mr. E. Morgan, of George-street, Eastleigh, has sent to us an advertisement for a practitioner to take up the appointment, which we have declined to publish, and he has also written to a well-known medical agent stating that the advertisement will appear in our columns, and that if he has a "good energetic practitioner" upon his list "we are open to receive one." Mr. Morgan adds that "if a good man comes along he can have free our support." We trust that the "good man" will not come along, and we are pleased to add that Mr. Morgan will get no assistance from the medical agent to whom he applied.

UGANDA HEALTH REPORT.

A REPORT on the Blue-book of the Uganda Protectorate for the year 1911-12, prepared by Mr. H. R. Wallis, C.M.G., Acting Governor, has just been presented to Parliament by the Colonial Office. In the section devoted to vital statistics and public health it is stated that the present estimated population of the Protectorate is 2,843,325. In 1911 the European births numbered 18, marriages 4, and deaths 11. There are no reliable returns as to the number of births, marriages, and deaths of natives. The health of European officials has been good. 396 cases were placed under treatment in hospital, as compared with 366 in the previous year, the increase being doubtless due to the larger number of officials resident. Malaria and diseases of the digestive system were responsible for the greatest number of admissions. There were 4 deaths of officials caused by illness during the year, and 4 cases of invaliding. There were 2 cases of blackwater fever, both of which recovered. The total number of officials resident during the year was 230. In regard to the European population generally, the number of admissions to hospital was 662, as compared with 680 in the previous year. In 1911 the principal causes of admission and the numbers treated for diseases mentioned were: malaria, 203; blackwater fever, 4; spirillum, 5; dengue, 5; enteric fever, 5; diseases of the respiratory system, 18; and digestive diseases, 152. Complete medical statistics of the European community are not, however, obtainable, as a large proportion of the non-official population do not come under the treatment of Government medical officers. The health of Asiatic officials in Government employ is only moderate. There were 748 admissions to the sick list during the year and 5 deaths. Of these numbers, 334 admissions were due to malaria and 5 to blackwater fever, which terminated fatally in 2 cases. The total number of natives treated in all Government hospitals and dispensaries was 70,571, with 251 deaths, as compared with 66,365, with 263 deaths in the previous year. The rate of infant mortality among natives is alarmingly high, and is influenced probably by the prevalence of venereal disease and by the persistence of unhygienic customs amongst natives at the time of childbirth.

During the year under review measures for the control and suppression of sleeping sickness were greatly extended. Additional areas were marked out and declared "infected areas" on the shores of Lake Albert, in the Nile district, and in the region of Lakes George and Edward. Porter traffic to the Lado enclave has been limited to journeys on certain selected routes which are believed to be particularly free from danger of infection. Porters are permitted to proceed only as far as the Congo posts near the border, and a limited time is allowed for the journey. All porters proceeding along these routes are medically examined and registered. Extensive clearing was commenced on the banks of the Victoria Nile between Foweira and Masindi Port to render the waterway safe. A considerable movement of population from the infected area of Unyoro is in course of arrangement. In the Nile districts, owing to the scattered distribution of Glossina palpalis and to the present uncertainty in regard to the local efficiency, as carriers of sleeping sickness, of G. morsitans and G. pallidipes, which abound in this region, no extensive movements of population are at present considered advisable. The total number of deaths from sleeping sickness reported was 1487, as compared with 1546 in the previous year.

Thirty-four cases of plague came under treatment, of which 29 were fatal; the returns for the previous year were 17 cases and 13 deaths. According to native returns the distribution of deaths from plague was as follows: Buganda, 613; Busoga, 1256; Bukedi, 1773; Unyoro, 31; Toro, 22; total, 3695. These returns cannot be regarded as entirely trustworthy, but the medical officers are of opinion that the disease is on the increase in Bukedi. As has been previously reported, plague is widely endemic in the Protectorate, and minor epidemics, which are seldom heard of, occur from time to time among the natives of various parts. A temporary plague hospital, with an isolation ward for contacts, exists at Mbale, which is the centre of the endemic area. Chiefs are encouraged to build segregation huts in villages, and are instructed to report all cases immediately on occurrence. Native inspectors are employed to see that these instructions are carried out, and also to supervise the isolation of infected persons and contacts and the burning of infected clothing and huts. No case of plague has yet occurred among the Asiatics in the infected area.

In regard to small-pox, medical officers visited epidemic areas, vaccinating contacts and many others, and destroying infected clothing and huts. The epidemics which occurred were effectively checked. Vaccination was performed in 3003 cases, as compared with 2491 in 1910 and 1654 in 1909. A permanent isolation hospital exists in Entebbe. At other stations temporary huts are erected as required and destroyed when the outbreak is over. Arrangements have been made with the native chiefs in Buganda and Bunyoro for the local segregation of lepers in small settlements. Difficulties are experienced in providing for regular food-supply and in ensuring adequate supervision. The sanitary condition of the principal stations is reported to be improving steadily. Organised systems for the removal and disposal of sewage and rubbish exist in larger townships and are being gradually extended. It cannot be said, however, that the organisation of any of the stations is as yet completely satisfactory. Lack of funds prevents more rapid progress. In regard to the affairs of Uganda generally the year is reported to have been one of marked progress and development.

ESPERANTO AND THE INTERNATIONAL MEDICAL CONGRESS.

To the Editor of THE LANCET.

SIR,—At a meeting of the Universal Medical Esperanto Association (Tutmonda Esperantista Kuracista Asocio) held in Cracow last August a committee was appointed to organise an Esperanto section in connexion with the forthcoming International Medical Congress, similar to that which was held during the last International Congress in Budapest. A considerable number of Russians, Poles, Hungarians, &c., stated that they would go to London if hopes could be held out of having such a section. Will any Esperanto medical men or others willing to help kindly communicate with me?

I am, Sir, yours faithfully,

G. JAMESON JOHNSTON, F.R.C.S. Irel.

13, Lower Fitzwilliam-street, Dublin.

THE NEED FOR AMBULANCES IN THE COUNTY OF LONDON.

AT an inquest held at the City Coroner's Court recently attention was drawn once more to the need for an efficient ambulance service within the jurisdiction of the London County Council, such as already is provided in the City. In the case in question the deceased was taken ill with apoplexy at the Islington Empire Theatre, and had to be conveyed on a hand ambulance to St. Bartholomew's Hospital, where he died, more than half an hour thus elapsing before he could receive medical attention. Dr. F. J. Waldo, in commenting upon this to the jury, expressed his desire that the London County Council should go into the matter and provide ambulances, but at the same time he intimated that in his opinion the Council's numerous and varied functions already sufficiently occupied the attention of its members, and that the provision of ambulances would better be entrusted to the Metropolitan Asylums Board. Unquestionably the enormous development of London's telephone system and of motor-car traffic has had little or no result in a phase of metropolitan life in which the telephone and the motor vehicle might by now have been playing extremely useful parts. Hardly any circumstance indirectly connected with medical or surgical science could do more to increase the efficiency of our hospital system than the institution of a service which would bring the patient suddenly taken ill or injured to the hospital with the least possible loss of time, and with the least possible likelihood of injury through recourse to an unsuitable mode of conveyance.

NOTE-BOOKS FOR DOCTORS AND NURSES.

WE have received from Messrs. Scott and Bowne copies of their useful little waistcoat note-books and diaries for 1913, adapted respectively for doctors and nurses. The diary is a week to an opening, with extra memoranda and cash pages. The doctor's book also contains data relating to ambulances, bacteriological research laboratories, inebriate retreats, homes, sanatoria, and lunatic asylums, legal information relating to medical matters, weights and measures, doses, X ray work, the usual tables relating to incubation periods, obstetrics, poisons, quarantine, weight and height, pulse and temperature, and so forth, addresses of associations for providing embalmers, male nurses and masseurs, messengers, and, of

course, postal, wages, and other every-day information. Much of this information is also contained in the Nurse's Diary, as well as data relating to the sick-room and cooking for the sick, confinements, disinfection, first aid, laying out, medical abbreviations and terms and much other matter likely to be of special service to nurses, not forgetting a space for register of engagements. Both books are neatly leather bound—the doctor's in blue, the nurse's in green—and contain a pencil in the back. As we are asked for suggestions we might say that it would be a great convenience if the book had pockets for cards and postage stamps, so as to obviate the necessity of carrying a separate card case.

Mr. John Dunlop, L.R.C.P.—The specimens sent are probably acari, but they are difficult to identify because they have been crushed between the slides. The best treatment would be by a weak solution of formalin—say 1 in 10. The acari probably do not come from the leather, but from the stuffing of the furniture. The solution suggested will not affect most kinds of stained leather.

Dr. R. A. Burns (Alabama).—Our correspondent's questions are too vague for detailed and precise answers. 1. He does not state in what part of the world it is wished to take the special courses in surgery, obstetrics, gynæcology, and diseases of children. 2. It is not clear which of the many contributions to the literature of hookworm disease and pellagra would be suitable.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Prof. W. H. Young: On the Formation of Usually Convergent Fourier Series.—Mr. R. V. Southwell: On the General Theory of Elastic Stability (communicated by Prof. A. E. H. Love).—Mr. C. M. Stubbs: A Spectro-photometric Comparison of the Emissivity of Solid and Liquid Copper and of Liquid Silver at High Temperatures with that of a Full Radiator (communicated by Prof. F. G. Donnan).—Mr. G. W. Walker: On a New Analytical Expression for the Representation of the Components of Diurnal Variation of Terrestrial Magnetism (communicated by Prof. J. H. Poynting).—Prof. E. W. Marchant: An Investigation into the Magnetic Behaviour of Iron and some other Metals under the Oscillatory Discharge from a Condenser (communicated by Prof. S. P. Thompson).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY.

SECTION OF ODONTOLOGY (Hon. Secretaries—Stanley P. Mummery, Robert McKay): at 8 P.M.

Discussion
On Mr. Badcock's paper on "Orthodontics in Modern Practice" (re-opened by Mr. J. F. Colyer).

TUESDAY.

SECTION OF MEDICINE (Hon. Secretaries—Robert Hutchison, H. Batty Shaw): at 5.30 P.M.

Paper:
Dr. Noel D. Bardswell: Records of King Edward VII. Sanatorium.

SECTION OF PSYCHIATRY (Hon. Secretaries—R. H. Cole, Bernard Hart): at 8.30 P.M.

Paper:
Dr. F. W. Mott, F.R.S.: The Neuropathic Inheritance.

WEDNESDAY.

SECTION OF THE HISTORY OF MEDICINE (Hon. Secretaries—Raymond Crawfurd, D'Arcy Power): at 5 P.M.

Dr. Steeves: Medical Allusions in the Writings of Francis Bacon.
Dr. Raymond Crawfurd will show some Plague Banners by lantern slides and the epidiascope.
Mr. B. Glanville Corney, I.S.O.: Some Oddities in Nomenclature and their Origins.
Mr. Alban Doran will give a demonstration of some Eighteenth Century Obstetric Forceps by means of the epidiascope.
Mr. D'Arcy Power will show, for Mr. Sidney Young, F.S.A., a Register of Sea Surgeons from 1707 to 1744.

THURSDAY.

SECTION OF BALNEOLOGY AND CLIMATOLOGY (Hon. Secretary—Chas. W. Buckley): at 5.30 P.M.

Discussion
On Fibrositis, opened by Dr. Llewellyn (Bath).
Dr. Stockman (Glasgow) will deal with the Pathology of the Condition.
Mr. Kenneth W. Goadby will deal with the Bacteriology of the Condition.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8 P.M., Exhibition of Clinical Cases.

HARVEIAN SOCIETY OF LONDON, St. Mary's Hospital, Paddington, W.

THURSDAY.—8 P.M., Clinical Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. E. G. Little: Clinique (Skin). 5.15 P.M., Lecture:—Mr. E. M. Little: Some Recent Advances in the Treatment of Scoliosis (Lateral Curvature of the Spine).

TUESDAY.—4 P.M., Dr. J. Taylor: Clinique (Medical). 5.15 P.M., Lecture:—Dr. N. Raw (Liverpool): The Value of Tuberculin in the Diagnosis and Treatment of Tuberculosis.

WEDNESDAY.—4 P.M., Mr. G. B. M. White: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. D. Forsyth: Psycho-analysis (continued).

THURSDAY.—4 P.M., Dr. T. G. Stewart: Clinique (Medical). 5.15 P.M., Lecture:—Mr. J. D. Mortimer: Shock during Anæsthesia.

FRIDAY.—4 P.M., Mr. R. E. Bickerton: Clinique (Eye). 5.15 P.M., Lecture:—Dr. W. Wingrave: Spirochætes.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 11 A.M., Mr. Addison: Demonstration of Minor Operations. 12 noon, Dr. Bernstein: Pathological Demonstration. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. G. Stewart: Diseases of the Pituitary Body.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin. 5 P.M., Lecture:—Dr. Low: Yellow Fever.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 10.30 A.M., Medical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. Souttar: Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Practical Medicine.

THURSDAY.—10.30 A.M., Dr. Simson: Gynæcological Demonstration. 12.15 P.M., Lecture:—Dr. G. Stewart: Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. Dunn: Diseases of the Eye. 5 P.M., Lecture:—Dr. G. Stewart: Diseases of the Pituitary Body.

FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 10.30 A.M., Lecture:—Dr. Owen: Practical Medicine. 12.15 P.M., Dr. Bernstein: Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin. 5 P.M., Lecture:—Dr. R. Lloyd: Anæsthetics.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Mr. Souttar: Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery.

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. Dr. A. Davies: Pathological Demonstration. 3.15 P.M., Dr. R. Wells: Medicine.

FRIDAY.—Out-patient Demonstrations:—10 A.M., Dr. C. Singer: Medical. Mr. A. J. Walton: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford: Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Mr. P. Cole: Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—10 A.M., Dr. W. Steuart: Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

TUESDAY.—Clinic; 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting). 4.30 P.M., Demonstration:—Dr. A. E. Giles: Gynæcological, illustrated by clay modelling.

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Special Demonstration:—Dr. G. N. Meachen: Selected Skin Cases.

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. A. Duncan).

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.

WEDNESDAY.—4.30 P.M., Lecture:—Dr. Young: The Cardio-vascular System in Pulmonary Tuberculosis.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Dr. R. Russell: Intracranial Tumours.

FRIDAY.—3.30 P.M., Clinical Lecture:—Mr. P. Sargent: Trigeminal Neuralgia.

CANCER HOSPITAL, Museum of the Hospital, Fulham-road, S.W.

WEDNESDAY.—5 P.M., Mr. R. H. J. Swan: Tumours of the Kidney (illustrated by cases and microscopic and other specimens).

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

TUESDAY.—2 P.M., Dr. W. Griffith: The Pathology of the Skin.—6 P.M., Mr. W. Hampson: X Rays, Lupus, and Rodent Ulcer.

THURSDAY.—6 P.M., Dr. M. Dockrell: Coccus Diseases—I., Impetigo Contagiosa; II., Furuncle; III., Carbuncle; IV., Coccogenic Sycosis.

ANCOATS HOSPITAL, Manchester.

THURSDAY.—4.15 P.M., Mr. J. Morley: Relation of Appendicitis to Gastric Ulcer. (Post-Graduate Clinic.)

MANCHESTER ROYAL INFIRMARY.

TUESDAY.—4.30 P.M., Dr. Cunliffe: Rheumatoid Arthritis and Osteo-arthritis. (Post-Graduate Clinic.)

FRIDAY.—4.30 P.M., Mr. Burgess: Prostatectomy. (Post-Graduate Clinic.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

WE shall publish this diary from time to time that our readers may have under their hands the dates of the approaching scientific Congresses. It is unnecessary to issue the lists of all these functions week by week, and we propose to make only such gatherings as will occur in the immediate future the subject of regular announcement. The following Congresses, Conferences, and Exhibitions are announced:—

March 17th-20th (Paris).—International Congress of Physical Education.

(Easter week) (Berlin).—Fourth International Congress for Physiotherapy.

April 3rd-9th (London).—International Congress of Historical Studies.

,, 6th-12th.—Health Week.

,, 22nd-25th (London, Horticultural Hall).—Nursing Conference and Exhibition.

,, 26th (Ghent) (opens).—International Exhibition.

July 7th-12th (Exeter).—Twenty-eighth Congress of the Royal Sanitary Institute.

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1912 were given in THE LANCET of Dec. 28th, 1912.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Jan. 22nd, 1913.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Jan. 16	29·54	S.	0·27	68	47	39	39	40	Fine
,, 17	29·45	S.W.	0·09	59	46	40	41	42	Raining
,, 18	29·63	S.	0·04	56	46	37	38	38	Foggy
,, 19	29·81	S.W.	...	49	47	37	39	41	Cloudy
,, 20	29·23	S.W.	0·15	64	49	37	43	44	Raining
,, 21	29·26	W.	0 11	46	44	42	41	42	Overcast
,, 22	30·10	N.E.	...	40	38	34	34	35	Fine

The following journals, magazines, &c., have been received:—Archives de Médecine et Pharmacie Navales, Tropical Diseases Bulletin, St. Thomas's Hospital Gazette, Journal of Hygiene, Journal of Obstetrics and Gynæcology of the British Empire, Centralblatt für Allgemeine Pathologie und Pathologische Anatomie, American Practitioner, American Medicine, British Journal of Dental Science, Surgery, Gynecology, and Obstetrics, Indian Medical Record, Therapist, Journal of Obstetrics, Medical Record, Archiv für Rettungswesen und erste Aerztliche Hilfe, Bulletin de la Société de l'Internat des Hôpitaux de Paris.

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